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M E D I C A L
I N Q U I R I E S
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O B S E R V A T I O N S.

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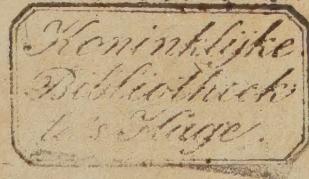
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P R E F A C E.

THE candid reception of a small volume of Inquiries and Observations, published in the year 1788, has encouraged me to offer a second to the public, with the same title. Three of the inquiries were published several years ago; two* of them in pamphlets, and the third† in the second volume of the American Philosophical Transactions. They are now republished, in their present form, at the request of several of my friends, with the addition, chiefly, of a few notes.

I am aware of the fate of every attempt to introduce new opinions into medicine. My apology for this attempt in some of the following essays is, that I believe the want of success in the treatment of those diseases which are thought to be incurable, is occasioned, in most cases, by an attachment to such theories as are imperfect or erroneous. I do not say, by a want of theory altogether, for it is impossible for a physician to prescribe, without a theory of some kind. I be-

* The inquiry into the influence of physical causes on the moral faculty, and the inquiry into the influence of spirituous liquors upon the human body, &c.

† The inquiry into the causes of the increase of bilious and intermitting fevers in Pennsylvania.

lieve further, after all that has been said against theory, and in favour of simple observation in medicine, that uniform and complete success can never be attained, but by combining with observation a perfect knowledge of all the causes of diseases. Perhaps it would be equally just to assert, that observation will always be extensive, accurate, and useful, in proportion as it is directed by principles in medicine.

I have one more excuse to offer for my temerity in proposing the new opinions which are contained in the following inquiries, and that is, they were not sought for, but obtruded upon me, and that too in spite of a conviction of the certain loss of reputation which follows a change of opinion upon any subject; for I well knew the world was not disposed to admit as a justification of this change, that it is always the necessary effect of the discovery or adoption of new truths; and that stability in principles and practice, in an imperfect science, is, for the most part, the effect of a timid or slothful perseverance in ignorance or error.

In departing in some things from the system of Dr. Cullen, in which I was educated, I do not relinquish the whole of his principles, much less do I reject indiscriminately the systems of authors, whether ancient or modern, of less reputation. Truth in medicine, as far as it has been discovered, like truth in religion, appears to exist in greater or less proportions in different systems; but the fabric which shall include a knowledge of the causes and cure of every disease, remains yet to be completed, by an application to its unfinished parts, of the successive labours of Physicians in generations, or perhaps ages, yet to come.

Had I yielded to personal considerations, I should have kept these papers a few years longer from the public eye, in order that they might have become more correct from the influence which time alone exerts upon all literary performances; but I have preferred at every hazard, sending them thus early into the world, from a desire that my opinions and practice may be corrected, or supported, by the auxiliary observations and reasonings of my medical brethren; and that several formidable diseases may thereby be opposed, not by an individual only, but by the confederated exertions of men of different talents, and situations, in every part of the republic of medicine.

I had another reason for committing these Essays to the press, in their present immature state, and that was, I have observed freedom in thinking, to be necessarily connected with freedom in communicating the result of inquiries after truth. I consider this volume therefore, with all its imperfections, as a pledge of equal boldness, and I hope, of more success, in all future investigations.

PHILADELPHIA, }
4th July, 1793. }

P R E F A C E

To the Second Edition.

SINCE the publication of the first edition of this Volume, the Author has had frequent occasions to be satisfied with the principles, and practice recommended in it. A few additions have been made to this edition, but no alterations in any part of it, except in the choice of certain phrases more accommodated to the unity and simplicity of diseases than those which have been introduced by the Nosological Systems of Medicine.

BENJAMIN RUSH.

25th, April, 1797.

AN
I N Q U I R Y

INTO THE INFLUENCE OF PHYSICAL CAUSES
UPON THE MORAL FACULTY,

DELIVERED BEFORE THE
AMERICAN PHILOSOPHICAL SOCIETY,

Held in Philadelphia, on the 27th of February, 1786.

GENTLEMEN,

IT was for the laudable purpose of exciting a spirit of emulation and inquiry, among the members of our body, that the founders of our society instituted an annual oration. The task of preparing, and delivering this exercise, hath devolved, once more, upon me. I have submitted to it, not because I thought myself capable of fulfilling your intentions, but because I wished, by a testimony of my obedience to your requests, to atone for my long absence from the temple of science.

The subject upon which I am to have the honour of addressing you this evening, is "An Inquiry in-

VOL. II.

A

" to

“ to the Influence of Physical Causes upon the
“ Moral Faculty.”

By the moral faculty I mean a capacity in the human mind of distinguishing and chusing good and evil, or in other words, virtue and vice. It is a native principle, and though it be capable of improvement by experience and reflection, it is not derived from either of them.—St. Paul and Cicero give us the most perfect account of it that is to be found in modern or ancient authors. “ For when the Gentiles, (says St. Paul) which have not the law, do by nature the things contained in the law, *these*, having not the law, are a law unto themselves ; which shew the works of the law written in their hearts, their consciences also bearing witness, and their thoughts the mean while accusing, or else excusing another.” *

The words of Cicero are as follow—“ Est igitur hæc, judices, non scripta, sed nata lex, quam non didicimus, accepimus, legimus, verum ex natura ipsa arripiimus, hauimus, expressimus, ad quam non docti, sed facti, non instituti, sed imbuti sumus.” † This faculty is often confounded with conscience, which is a distinct and independent capacity of the mind. This is evident from the passage

* Rom. i. 14. 15. † Oratio pro Milone.

• quoted

quoted from the writings of St. Paul, in which conscience is said to be the witness that accuses or excuses us, of a breach of the law written in our hearts. The moral faculty is what the schoolmen call the “*regula regulans*,”—the conscience is their “*regula regulata*.” Or, to speak in more modern terms, the moral faculty performs the office of a law-giver, while the business of conscience is to perform the duty of a judge. The moral faculty is to the conscience, what taste is to the judgment, and sensation to perception. It is quick in its operations, and, like the sensitive plant, acts without reflection, while conscience follows with deliberate steps, and measures all her actions, by the unerring square of right and wrong. The moral faculty exercises itself upon the actions of others. It approves even in books, of the virtues of a Trajan, and disapproves of the vices of a Marius, while conscience confines its operations only to its own actions. These two capacities of the mind are generally in an exact ratio to each other, but they sometimes exist in different degrees in the same person. Hence we often find conscience in its full vigour, with a diminished tone, or total absence of the moral faculty.

It has long been a question among metaphysicians, whether the conscience be seated in the will

or in the understanding. The controversy can only be settled by admitting the will to be the seat of the moral faculty, and the understanding to be the seat of the conscience. The mysterious nature of the union of those two moral principles with the will and understanding, is a subject foreign to the business of the present inquiry.—

As I consider virtue and vice to consist in *action*, and not in opinion, and as this action has its seat in the *will*, and not in the conscience, I shall confine my inquiries chiefly to the influence of physical causes upon that moral power of the mind, which is connected with volition, although many of these causes affect likewise upon the conscience, as I shall shew hereafter.—The state of the moral faculty is visible in actions, which affect the well-being of society. The state of the conscience is invisible, and therefore removed beyond our investigation.

The moral faculty has received different names from different authors. It is the “moral sense” of Dr. Hutchison—the “sympathy” of Dr. Adam Smith—the “moral instinct” of Rousseau—and “the light that lighteth every man that cometh into the world” of St. John. I have adopted the term of moral faculty from Dr. Beattie, because I conceive it conveys with the most perspicuity, the idea

idea of a capacity in the mind, of chusing good and evil.

Our books of medicine contain many records of the effects of physical causes upon the memory—the imagination—and the judgment. In some instances we behold their operation only on one,—in others on two,—and in many cases upon the whole of these faculties. Their derangement has received different names, according to the number or nature of the faculties that are affected. The loss of memory has been called “*amnesia*”—false judgment upon one subject has been called “*melancholia*”—false judgment upon all subjects has been called “*mania*”—and a defect of all the three intellectual faculties that have been mentioned, has received the name of “*amentia*.” Persons who labour under the derangement, or want of these faculties of the mind, are considered, very properly, as subjects of medicine; and there are many cases upon record that prove, that their diseases have yielded to the healing art.

In order to illustrate the effects of physical causes upon the moral faculty, it will be necessary *first* to shew their effects upon the memory, the imagination, and the judgment; and at the same time to point out the analogy between their

operation upon the intellectual powers of the mind, and the moral faculty.

1. Do we observe a connection between the intellectual faculties, and the degrees of consistency and firmness of the brain in infancy and childhood? The same connection has been observed between the strength as well as the progress of the moral faculty in children.

2. Do we observe a certain size of the brain, and a peculiar cast of features, such as the prominent eye, and the aquiline nose, to be connected with extraordinary portions of genius? We observe a similar connection between the figure and temperament of the body, and certain moral qualities. Hence, we often ascribe good temper and benevolence to corpulency, and irascibility to sanguineous habits. Cæsar thought himself safe in the friendship of the “sleek-headed” Anthony and Dolabella; but was afraid to trust to the professions of the slender Cassius.

3. Do we observe certain degrees of the intellectual faculties to be hereditary in certain families? The same observation has been frequently extended to moral qualities. Hence we often find certain virtues and vices as peculiar to families, through

through all their degrees of consanguinity, and duration, as a peculiarity of voice, complexion, or shape.

4. Do we observe instances of a total want of memory, imagination, and judgment, either from an original defect in the stamina of the brain, or from the influence of physical causes?—The same unnatural defect is sometimes observed, and probably from the same causes, of a moral faculty. The celebrated Servin whose character is drawn by the Duke of Sully in his Memoirs, appears to be an instance of the total absence of the moral faculty, while the chasm, produced by this defect, seems to have been filled up by a more than common extension of every other power of his mind. I beg leave to repeat the history of this prodigy of vice and knowledge.—“ Let the reader represent to himself a man of a genius so lively, and of an understanding so extensive, as rendered him scarce ignorant of any thing that could be known —of so vast and ready a comprehension, that he immediately made himself master of whatever he attempted—and of so prodigious a memory, that he never forgot what he once learned. He possessed all parts of philosophy, and the mathematics, particularly fortification and drawing. Even in theology he was so well skilled, that

A 4 “ he

“ he was an excellent preacher, whenever he had
“ a mind to exert that talent, and an able dispu-
“ tant, for and against the reformed religion indif-
“ ferently. He not only understood Greek, He-
“ brew, and all the languages which we call
“ learned, but also all the different jargons, or
“ modern dialects. He accented and pronounced
“ them so naturally, and so perfectly imitated the
“ gestures and manners both of the several nations
“ of Europe, and the particular provinces of
“ France, that he might have been taken for a
“ native of all, or any of these countries: and this
“ quality he applied to counterfeit all sorts of per-
“ sons, wherein he succeeded wonderfully. He was
“ moreover the best comedian, and the greatest
“ droll that perhaps ever appeared. He had a
“ genius for poetry, and had wrote many verses.
“ He played upon almost all instruments, was a
“ perfect master of music, and sung most agree-
“ ably and justly. He likewise could say mass,
“ for he was of a disposition to do, as well as to
“ know, all things. His body was perfectly well
“ suited to his mind. He was light, nimble, and
“ dexterous, and fit for all exercises. He could
“ ride well, and in dancing, wrestling, and leap-
“ ing, he was admired. There are not any re-
“ creative games that he did not know, and he
“ was skilled in almost all mechanic arts.—But

“ now

“ now for the reverse of the medal. Here it appeared, that he was treacherous—cruel—cowardly—deceitful—a liar—a cheat—a drunkard and a glutton—a sharper in play—immersed in every species of vice—a blasphemer—an atheist. —In a word, in him might be found all the vices that are contrary to nature—honour—religion—and society,—the truth of which he himself evinced with his latest breath; for he died in the flower of his age, in a common brothel, perfectly corrupted by his debaucheries, and expired with the glass in his hand, cursing, and denying God*.”

It was probably a state of the human mind such as has been described, that our Saviour alluded to in the disciple, who was about to betray him, when he called him “a devil.” Perhaps the essence of depravity in infernal spirits, consists in their being wholly devoid of a moral faculty. In them the will has probably lost the power of chusing†, as well as the capacity of enjoying moral good. It is true, we

* Vol. III. p. 216, 217.

† Milton seems to have been of this opinion. Hence, after ascribing repentance to Satan, he makes him declare, “ Farewell remorse: all good to me is lost, “ *Evil, be thou my good.*”

read of their trembling in a belief of the existence of a God, and of their anticipating future punishment by asking, whether they were to be tormented before their time: But this is the effect of conscience, and hence arises another argument in favour of this judicial power of the mind, being distinct from the moral faculty. It would seem as if the Supreme Being had preserved the moral faculty in man from the ruins of his fall, on purpose to guide him back again to Paradise, and at the same time had constituted the conscience, both in men and in fallen spirits, a kind of royalty in his moral empire, on purpose to shew his property in all intelligent creatures, and their original resemblance to himself. Perhaps the essence of moral depravity in man consists in a total, but temporary suspension of the power of conscience. Persons in this situation are emphatically said in the Scriptures to be “past feeling”—and to have their consciences seared with a “hot iron”—they are likewise said to be “twice dead”—that is, the same torpor or moral insensibility, has seized both the moral faculty and the conscience.

5. Do we ever observe instances of the existence of only *one* of the three intellectual powers of the mind that have been named, in the absence of the other two? We observe something of the same kind

kind with respect to the moral faculty. I once knew a man, who discovered no one mark of reason, who possessed the moral sense or faculty in so high a degree, that he spent his whole life in acts of benevolence. He was not only inoffensive, (which is not always the case with idiots) but he was kind and affectionate to every body. He had no ideas of time, but what were suggested to him by the returns of the stated periods for public worship, in which he appeared to take great delight. He spent several hours of every day in devotion, in which he was so careful to be private, that he was once found in the most improbable place in the world for that purpose, viz. in an oven.

6. Do we observe the memory, the imagination and the judgment, to be affected by diseases, particularly by madness? Where is the physician, who has not seen the moral faculty affected from the same causes! How often do we see the temper wholly changed by a fit of sickness! And how often do we hear persons of the most delicate virtue, utter speeches in the delirium of a fever, that are offensive to decency, or good manners! I have heard a well attested history of a clergyman of the most exemplary moral character, who spent the last moments of a fever which deprived him both of his reason and his life, in profane

profane cursing and swearing. I once attended a young woman in a nervous fever, who discovered after her recovery, a loss of her former habit of veracity. Her memory (a defect of which, might be suspected of being the cause of this vice) was in every respect as perfect as it was before the attack of the fever*. The instances of immorality in maniacs, who were formerly distinguished for the opposite character, are so numerous, and well known, that it will not be necessary to select any cases, to establish the truth of the proposition contained under this head.

7. Do we observe any of the three intellectual faculties that have been named, enlarged by diseases? Patients in the delirium of a fever, often discover extraordinary flights of imagination, and madmen often astonish us with their wonderful acts of memory. The same enlargement, sometimes, appears in the operations of the moral faculty. I have more than once heard the most sublime discourses of morality in the cell of an hospital, and who has not seen instances of patients in acute diseases, discovering degrees of benevo-

* I have selected this case from many others, which have come under my notice, in which the moral faculty appeared to be impaired by diseases, particularly by the typhus of Dr. Cullen, and by those species of palsy which affect the brain.

lence and integrity, that were not natural to them in the ordinary course of their lives?*

8. Do we ever observe a partial insanity, or false perception on one subject, while the judgment is sound and correct, upon all others? We perceive, in some instances, a similar defect in the moral faculty. There are persons who are moral in the highest degree, as to certain duties, who nevertheless live under the influence of some one vice. I knew an instance of a woman, who was exemplary in her obedience to every command of the moral law, except one. She could not refrain from stealing. What made this vice the more remarkable was, that she was in easy circumstances, and not addicted to extravagance in any thing. Such was her propensity to this vice, that when she could lay her hands upon nothing more valuable, she would often, at the table of a friend, fill her pockets secretly with bread. As a proof that her judgment was not affected by this defect in her moral faculty, she would both confess and lament her crime, when detected in it.

* Xenophon makes Cyrus to declare, in his last moments, "That the soul of man at the hour of death appears *more divine*, and then foresees something of future events."

9. Do we observe the imagination in many instances to be affected with apprehensions of dangers that have no existence? In like manner we observe the moral faculty to discover a sensibility to vice, that is by no means proportioned to its degrees of depravity. How often do we see persons labouring under this morbid sensibility of the moral faculty, refuse to give a direct answer to a plain question, that related perhaps only to the weather, or to the hour of the day, lest they should wound the peace of their minds by telling a falsehood!

10. Do dreams affect the memory—the imagination—and the judgment? Dreams are nothing but incoherent ideas, occasioned by partial or imperfect sleep. There is a variety in the suspension of the faculties and operations of the mind in this state of the system. In some cases the imagination only is deranged in dreams—in others the memory is affected—and in others the judgment.—But there are cases, in which the change that is produced in the state of the brain, by means of sleep, affects the moral faculty likewise; hence we sometimes dream of doing and saying things when asleep, which we shudder at, as soon as we awake. This supposed defection from virtue, exists frequently in dreams where the memory and judgment are scarcely

scarcely impaired. It cannot therefore be ascribed to an absence of the exercises of those two powers of the mind.

11. Do we read, in the accounts of travellers, of men, who in respect of intellectual capacity and enjoyments, are but a few degrees above brutes? We read likewise of a similar degradation of our species, in respect to moral capacity and feeling. Here it will be necessary to remark, that the low degrees of moral perception, that have been discovered in certain African and Russian tribes of men, no more invalidate our proposition of the universal and essential existence of a moral faculty in the human mind, than the low state of their intellects prove, that reason is not natural to man. Their perceptions of good and evil are in an exact proportion to their intellectual powers. But I will go further, and admit with Mr. Locke*, that some savage nations are totally devoid of the moral faculty, yet it will by no means follow, that this was the original constitution of their minds. The appetite for certain aliments is uniform among all mankind. Where is the nation and the individual, in their primitive state of health, to whom bread is not agreeable? But if we should find savages, or individuals, whose stomachs have been so disorder-

* *Essay concerning the Human Understanding*, Book I. Chap. III.

ed by intemperance, as to refuse this simple and wholesome article of diet, shall we assert that this was the original constitution of their appetites?— By no means. As well might we assert, because savages destroy their beauty by painting and cutting their faces, that the principles of taste do not exist naturally in the human mind. It is with virtue as with fire. It exists in the mind, as fire does in certain bodies in a latent or quiescent state. As collision renders the one sensible, so education renders the other visible. It would be as absurd to maintain, because olives become agreeable to many people from habit, that we have no natural appetites for any other kind of food, as to assert that any part of the human species exist without a moral principle, because in some of them, it has wanted causes to excite it into action, or has been perverted by example. There are appetites that are wholly artificial. There are tastes so entirely vitiated, as to perceive beauty in deformity. There are torpid and unnatural passions. Why, under certain unfavourable circumstances, may there not exist also a moral faculty, in a state of sleep, or subject to mistakes?

THE only apology I shall make, for presuming to differ from that justly-celebrated oracle,* who first

* Mr. Locke.

unfolded to us a map of the intellectual world, shall be, that the eagle eye of genius often darts its views beyond the notice of facts, which are accommodated to the slender organs of perception of men, who possess no other talent than that of observation.

It is not surprising, that Mr. Locke has confounded this moral principle with *reason*, or that Lord Shaftsbury has confounded it with *taste*, since all three of these faculties agree in the objects of their approbation, notwithstanding they exist in the mind independently of each other. The favourable influence which the progress of science and taste has had upon the morals, can be ascribed to nothing else, but to the perfect union that subsists in nature between the dictates of reason—of taste—and of the moral faculty. Why has the spirit of humanity made such rapid progress for some years past in the courts of Europe? It is because kings and their ministers have been taught to *reason* upon philosophical subjects.—Why have indecency and profanity been banished from the stage in London and Paris? It is because immorality is an offence against the highly cultivated *taste* of the French and English nations.

It must afford great pleasure to the lovers of virtue, to behold the depth and extent of this

moral principle in the human mind. Happily for the human race, the intimations of duty and the road to happiness are not left to the slow operations or doubtful inductions of reason, nor to the precarious decisions of taste! Hence we often find the moral faculty in a state of vigour, in persons in whom reason and taste exist in a weak, or in an uncultivated state. It is worthy of notice likewise, that while *second* thoughts are best in matters of judgment, *first* thoughts are always to be preferred in matters that relate to morality. *Second* thoughts, in these cases, are generally parties between duty and corrupted inclinations. Hence Rousseau has justly said, that “a well regulated “moral instinct is the surest guide to happiness.”

It must afford equal pleasure to the lovers of virtue to behold, that our moral conduct and happiness are not committed to the determination of a single legislative power.—The conscience, like a wise and faithful legislative council, performs the office of a check upon the moral faculty, and thus prevents the fatal consequences of immoral actions.

An objection, I foresee, will arise to the doctrine of the influence of physical causes upon the moral faculty, from its being supposed to favour the opinion

opinion of the *materiality* of the soul. But I do not see that this doctrine obliges us to decide upon the question of the nature of the soul, any more than the facts which prove the influence of physical causes upon the memory, the imagination, or the judgment. I shall, however, remark upon this subject, that the writers in favour of the *immortality* of the soul have done that truth great injury, by connecting it necessarily with its *immateriality*. The immortality of the soul depends upon the *will* of the Deity, and not upon the supposed properties of spirit. Matter is in its own nature as immortal as spirit. It is resolvable by heat and mixture into a variety of forms ; but it requires the same Almighty hand to annihilate it, that it did to create it. I know of no arguments to prove the immortality of the soul, but such as are derived from the Christian revelation.* It would be as reasonable to assert, that the basin of the ocean is immortal, from the greatness of its capacity to hold water ; or that we are to live for ever in this world, because we are afraid of dying, as to maintain the immortality of the soul, from the greatness of its capacity for knowledge and happiness, or from its dread of annihilation.

* "Life and immortality are brought to light only through the Gospel."—2 Tim. i. 10.

I remarked in the beginning of this discourse, that persons who were deprived of the just exercise of memory, imagination, or judgment, were proper subjects of medicine; and that there are many cases upon record which prove, that the diseases from the derangement of these faculties, have yielded to the healing art.

It is perhaps only because the disorders of the moral faculty have not been traced to a connection with physical causes, that medical writers have neglected to give them a place in their systems of nosology, and that so few attempts have been hitherto made, to lessen or remove them by physical as well as rational and moral remedies.

I shall not attempt to derive any support to my opinions, from the analogy of the influence of physical causes upon the temper and conduct of brute animals. The facts which I shall produce in favour of the action of these causes upon morals in the human species, will, I hope, render unnecessary the arguments that might be drawn from that quarter.

I am aware, that in venturing upon this subject, I step upon untrodden ground.—I feel as *Æneas* did, when he was about to enter the gates of *Avernus*,

Avernum, but without a Sibyl to instruct me in the mysteries that are before me. I foresee, that men who have been educated in the mechanical habits of adopting popular or established opinions will revolt at the doctrine I am about to deliver—while men of sense and genius will hear my propositions with candor, and if they do not adopt them, will commend that boldness of inquiry, that prompted me to broach them.

I shall begin with an attempt to supply the defects of nosological writers, by naming the partial or weakened action of the moral faculty, MICRONOMIA. The total absence of this faculty, I shall call ANOMIA. By the law, referred to in these new genera of vesaniæ, I mean the law of nature written in the human heart, and which I formerly quoted from the writings of St. Paul.

In treating of the effects of physical causes upon the moral faculty, it might help to extend our ideas upon this subject, to reduce virtues and vices to certain species, and to point out the effects of particular species of virtue and vice; but this would lead us into a field too extensive for the limits of the present inquiry. I shall only hint at a few cases, and have no doubt but the ingenuity

of my auditors will supply my silence, by applying the rest.

It is immaterial, whether the physical causes that are to be enumerated, act upon the moral faculty through the medium of the senses, the passions, the memory, or the imagination. Their influence is equally certain, whether they act as remote, predisposing, or occasional causes.

i. The effects of CLIMATE upon the moral faculty claim our first attention. Not only individuals, but nations, derive a considerable part of their moral, as well as intellectual character, from the different portions they enjoy of the rays of the sun. Irascibility, levity, timidity, and indolence, tempered with occasional emotions of benevolence, are the moral qualities of the inhabitants of warm climates, while selfishness, tempered with sincerity and integrity, form the moral character of the inhabitants of cold countries, — The state of the weather, and the seasons of the year also, have a visible effect upon moral sensibility. The month of November, in Great Britain, rendered gloomy by constant fogs and rains, has been thought to favour the perpetration of the worst species of murder, while the vernal sun,

sun, in middle latitudes, has been as generally remarked for producing gentleness and benevolence.

2. The effects of DIET upon the moral faculty are more certain, though less attended to, than the effects of climate. “Fulness of bread,” we are told, was one of the predisposing causes of the vices of the cities of the plain. The fasts so often inculcated among the Jews, were intended to lessen the incentives to vice; for pride, cruelty, and sensuality, are as much the natural consequences of luxury, as apoplexies and palsies. But the *quality* as well as the quantity of aliment, has an influence upon morals; hence we find the moral diseases that have been mentioned, are most frequently the offspring of animal food. The prophet Isaiah seems to have been sensible of this, when he ascribes such salutary effects to a temperate and vegetable diet. “Butter and honey shall ‘he eat,’ says he, ‘that he may know to refuse ‘the evil, and to chuse the good.’”—But we have many facts which prove the efficacy of a vegetable diet upon the passions. Dr. Arbuthnot assures us, that he cured several patients of irascible tempers, by nothing but a prescription of this simple and temperate regimen.

3. The effects of CERTAIN DRINKS upon the moral faculty are not less observable, than upon the intellectual powers of the mind. Fermented liquors of a good quality, and taken in a moderate quantity, are favourable to the virtues of candor, benevolence, and generosity ; but when they are taken in excess, or when they are of a bad quality, and drank even in a moderate quantity, they seldom fail of rousing every latent spark of vice into action. The last of these facts is so notorious, that when a man is observed to be ill-natured or quarrelsome in Portugal, after drinking, it is common in that country to say, that “ he has “ drunken bad wine.” While occasional fits of intoxication produce ill temper in many people, habitual drunkenness (which is generally produced by distilled spirits) never fails to eradicate veracity and integrity from the human mind. Perhaps this may be the reason why the Spaniards, in ancient times, never admitted a man’s evidence in a court of justice, who had been convicted of drunkenness.—Water is the universal sedative of turbulent passions—it not only promotes a general equanimity of temper, but it composes anger. I have heard several well-attested cases, of a draught of cold water having suddenly composed this violent passion, after the usual remedies of reason had been applied to no purpose.

4. EXTREME HUNGER produces the most unfriendly effects upon moral sensibility. It is immaterial, whether it acts by inducing a relaxation of the solids, or an acrimony of the fluids, or by the combined operation of both those physical causes. The Indians in this country whet their appetites for that savage species of war, which is peculiar to them, by the stimulus of hunger ; hence, we are told, they always return meagre and emaciated from their military excursions. In civilized life we often behold this sensation an overbalance for the restraints of moral feeling ; and perhaps this may be the reason, why poverty, which is the most frequent parent of hunger, disposes so generally to theft ; for the character of hunger is taken from that vice—It belongs to it “ to break through “ stone walls.” So much does this sensation predominate over reason and moral feeling, that Cardinal de Retz suggests to politicians, never to risk a motion in a popular assembly, however wise or just it may be, immediately before dinner.—That temper must be uncommonly guarded, which is not disturbed by long abstinence from food. One of the worthiest men I ever knew, who made his breakfast his principal meal, was peevish and disagreeable to his friends and family, from the time he left his bed, till he sat down to his morning repast, after which, cheerfulness sparkled in his countenance,

countenance, and he became the delight of all around him.

5. I hinted formerly, in proving the analogy between the effects of DISEASES upon the intellects, and upon the moral faculty, that the latter was frequently impaired by madness. I beg leave to add further upon this head, that not only madness, but the hysteria and hypochondriasis, as well as all those states of the body, whether idiopathic or symptomatic, which are accompanied with preternatural irritability, sensibility, torpor, stupor, or mobility of the nervous system, dispose to vice, either of the body or of the mind. It is in vain to attack these vices with lectures upon morality. They are only to be cured by medicine, particularly by exercise, the cold bath, and by a cold or warm atmosphere. The young woman, whose case I mentioned formerly, that lost her habit of veracity by a nervous fever, recovered this virtue, as soon as her system recovered its natural tone, from the cold weather which happily succeeded her fever. *

6. IDLENESS

* There is a morbid state of excitability in the body during the convalescence from fever, which is intimately connected with an undue propensity to venereal pleasures. I have met with several instances of it. The marriage of the celebrated

6. IDLENESS is the parent of every vice. It is mentioned in the Old Testament as another of the predisposing causes of the vices of the cities of the plain. LABOUR of all kinds, favours and facilitates the practice of virtue. The country life is happy, chiefly because its laborious employments are favourable to virtue, and unfriendly to vice. It is a common practice, I have been told, for the planters in the Southern States, to consign a house slave, who has become vicious from idleness, to the drudgery of the field, in order to reform him. The Bridewells and workhouses of all civilized countries prove, that LABOUR is not only

brated Mr. Howard to a woman who was twice as old as himself, and very sickly, has been ascribed by his biographer, Dr. Aiken, to *gratitude* for her great attention to him in a fit of sickness. I am disposed to ascribe it to a sudden paroxysm of another passion, which as a religious man he could not gratify in any other, than in a lawful way. I have heard of two young clergymen who married the women who had nursed them in fits of sickness. In both cases there was great inequality in their years, and condition in life. Their motive was, probably, the same as that which I have attributed to Mr. Howard. Dr. Patrick Russel takes notice of an uncommon degree of venereal excitability which followed attacks of the plague at Messina, in 1743, in all ranks of people.—Marriages, he says, were more frequent after it than usual, and virgins were, in some instances violated, who died of that disorder, by persons who had just recovered from it.

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a very severe, but the most benevolent of all punishments, in as much as it is one of the most suitable means of reformation. Mr. Howard tells us in his History of Prisons, that in Holland it is a common saying, “ Make men work and you will “ make them honest.” And over the rasp and spin-house at **Grœningen**, this sentiment is expressed (he tells us) by a happy motto :

“ **Vitiorum semina—otium—labore exauiriendum.**”

The effects of steady labour in early life, in creating virtuous habits, is still more remarkable. The late Anthony Benezet of this city, whose benevolence was the centinel of the virtue, as well as of the happiness of his country, made it a constant rule in binding out poor children, to avoid putting them into wealthy families, but always preferred masters for them who worked themselves, and who obliged these children to work in their presence. If the habits of virtue, contracted by means of this apprenticeship to labour, are purely mechanical, their effects are, nevertheless, the same upon the happiness of society, as if they flowed from principle. The mind, moreover, when preserved by these means from weeds, becomes a more mel- low soil afterwards, for moral and rational improvement.

7. The effects of EXCESSIVE SLEEP are intimately connected with the effects of idleness upon the moral faculty: hence we find that moderate, and even scanty portions of sleep, in every part of the world, have been found to be friendly, not only to health and long life, but in many instances to morality. The practice of the Monks, who often sleep upon a floor, and who generally rise with the sun, for the sake of mortifying their sensual appetites, is certainly founded in wisdom, and has often produced the most salutary moral effects.

8. The effects of BODILY PAIN upon the moral, are not less remarkable than upon the intellectual powers of the mind. The late Dr. Gregory, of the university of Edinburgh, used to tell his pupils, that he always found his perceptions quicker in a fit of the gout, than at any other time. The pangs which attend the dissolution of the body, are often accompanied with conceptions and expressions upon the most ordinary subjects, that discover an uncommon elevation of the intellectual powers. The effects of bodily pain are exactly the same in rousing and directing the moral faculty. Bodily pain, we find, was one of the remedies employed in the Old Testament, for extirpating vice and promoting virtue: and Mr. Howard tells us, that he saw it employed successfully as a means.

means of reformation, in one of the prisons which he visited. If pain has a physical tendency to cure vice, I submit it to the consideration of parents and legislators, whether moderate degrees of corporal punishments, inflicted for a great length of time, would not be more medicinal in their effects, than the violent degrees of them, which are of short duration.

g. Too much cannot be said in favour of **CLEANLINESS**, as a physical means of promoting virtue. The writings of Moses have been called by military men, the best “orderly book” in the world. In every part of them we find cleanliness inculcated with as much zeal, as if it was part of the moral, instead of the Levitical law. Now, it is well known, that the principal design of every precept and rite of the ceremonial parts of the Jewish religion, was to prevent vice, and to promote virtue. All writers upon the leprosy, take notice of its connection with a certain vice. To this disease gross animal food, particularly swine’s flesh, and a dirty skin, have been thought to be predisposing causes—hence the reason, probably, why pork was forbidden, and why ablutions of the body and limbs were so frequently inculcated by the Jewish law. Sir John Pringle’s remarks, in his Oration upon Captain Cook’s Voyage, delivered

vered before the Royal Society in London, are very pertinent to this part of our subject.— “ Cleanliness (says he) is conducive to health, but “ it is not so obvious, that it also tends to good or- “ der and other virtues. Such (meaning the ship’s “ crew) as were made more cleanly, became more “ sober, more orderly, and more attentive to “ duty.” The benefit to be derived by parents and schoolmasters from attending to these facts, is too obvious to be mentioned.

10. I hope I shall be excused in placing SOLITUDE among the physical causes which influence the moral faculty, when I add, that I confine its effects to persons who are irreclaimable by rational or moral remedies. Mr. Howard informs us, that the chaplain of the prison at Liege in Germany assured him, “ that the most refractory “ and turbulent spirits, became tractable and sub- “ missive, by being closely confined for four or five “ days.” In bodies that are predisposed to vice, the stimulus of cheerful, but much more of profane society and conversation, upon the animal spirits, becomes an exciting cause, and like the stroke of the flint upon the steel, renders the sparks of vice both active and visible. By removing men out of the reach of this exciting cause, they are often reformed, especially if they are confined long enough

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to produce a sufficient chasm in their habits of vice. Where the benefit of reflection, and instruction from books, can be added to solitude and confinement, their good effects are still more certain. To this philosophers and poets in every age have assented, by describing the life of a hermit as a life of passive virtue.

11. Connected with solitude, as a mechanical means of promoting virtue, SILENCE deserves to be mentioned in this place. The late Dr Fothergill, in his plan of education for that benevolent institution at Ackworth, which was the last care of his useful life, says every thing that can be said in favour of this necessary discipline, in the following words. “ To habituate children from their early infancy, to silence and attention, is of the greatest advantage to them, not only as a preparative to their advancement in religious life, but as the groundwork of a well cultivated understanding. To have the active minds of children put under a kind of restraint—to be accustomed to turn their attention from external objects, and habituated to a degree of abstracted quiet, is a matter of great consequence, and lasting benefit to them. Although it cannot be supposed, that young and active minds are always engaged in silence as they ought to be, yet to be accus-

“ tomed thus to quietness, is no small point gained
“ towards fixing a habit of patience, and recollec-
“ tion, which seldom forsakes those who have
“ been properly instructed in this entrance of the
“ school of wisdom, during the residue of their
“ days.”

For the purpose of acquiring this branch of education, children cannot associate too early, nor too often with their parents, or with their superiors in age, rank, and wisdom.

12. The effects of music upon the moral faculty, have been felt and recorded in every country. Hence we are able to discover the virtues and vices of different nations, by their tunes, as certainly as by their laws. The effects of music, when simply mechanical, upon the passions, are powerful and extensive. But it remains yet to determine the degrees of moral ecstasy, that may be produced by an attack upon the ear, the reason, and the moral principle, at the same time, by the combined powers of music and eloquence.

13. The eloquence of the pulpit is nearly allied to music in its effects upon the moral faculty. It is true, there can be no permanent change in the temper, and moral conduct of a man, that is not derived from the understanding and the will; but

we must remember, that these two powers of the mind are most assailable, when they are attacked through the avenue of the passions ; and these, we know, when agitated by the powers of eloquence, exert a mechanical action upon every power of the soul. Hence we find in every age and country, where christianity has been propagated, the most accomplished orators have generally been the most successful reformers of mankind. There must be a defect of eloquence in a preacher, who with the resources for oratory, which are contained in the Old and New Testaments, does not produce in every man who hears him, at least a temporary love of virtue. I grant that the eloquence of the pulpit alone, cannot change men into christians, but it certainly possesses the power of changing brutes into men. Could the eloquence of the stage be properly directed, it is impossible to conceive the extent of its mechanical effects upon morals. The language and imagery of a Shakespeare, upon moral and religious subjects, poured upon the passions and the senses, in all the beauty and variety of dramatic representation ! Who could resist, or describe their effects ?

14. Odors of various kinds have been observed to act in the most sensible manner upon the moral faculty. Brydone tells us, upon the authority of a celebrated philosopher in Italy, that the peculiar

iliar wickedness of the people who live in the neighbourhood of *Ætna* and *Vesuvius*, is occasioned chiefly by the smell of the sulphur and of the hot exhalations which are constantly discharged from those volcanos. Agreeable odors, seldom fail to inspire serenity, and to compose the angry spirits—Hence the pleasure, and one of the advantages of a flower garden. The smoke of tobacco is likewise of a composing nature, and tends not only to produce what is called a train in perception, but to hush the agitated passions into silence and order—Hence the propriety of connecting the pipe or segar and the bottle together, in public company.

15. It will be sufficient only to mention light and darkness, to suggest facts in favour of the influence of each of them upon moral sensibility. How often do the peevish complaints of the night in sickness, give way to the composing rays of the light of the morning? *Othello* cannot murder *Desdemona* by candle-light, and who has not felt the effects of a blazing fire, upon the gentle passions?

16. It is to be lamented, that no experiments have as yet been made, to determine the effects of all the different species of Airs, which chemistry has lately discovered, upon the moral faculty. I have authority, from actual experiments, only to declare, that *Dephlogisticated Air*, when taken in-

to the lungs, produces cheerfulness, gentleness, and serenity of mind.

17. What shall we say of the effects of Medicines upon the moral faculty? That many substances in the *materia medica* act upon the intellects, is well known to physicians. Why should it be thought impossible for medicines, to act in like manner upon the moral faculty? May not the earth contain in its own bowels, or upon its surface, antidotes? But I will not blend facts with conjectures. Clouds and darkness still hang upon this part of my subject.

Let it not be suspected from any thing that I have delivered, that I suppose the influence of physical causes upon the moral faculty, renders the agency of divine influence unnecessary to our moral happiness. I only maintain, that the operations of the divine government are carried on in the moral, as in the natural world, by the instrumentality of second causes. I have only trodden in the footsteps of the inspired writers; for most of the physical causes I have enumerated, are connected with moral precepts, or have been used as the means of reformation from vice, in the Old and New Testaments. To the cases that have been mentioned I shall only add, that Nebuchadnezzar was cured of his pride, by means of solitude and

and a vegetable diet.—Saul was cured of his evil spirit, by means of David's harp, and St. Paul expressly says, “ I keep my body under, and bring “ it into subjection, lest that by any means, when I “ have preached to others, I myself should be a “ cast-away.” But I will go one step further, and add in favour of divine influence upon the moral principle, that in those extraordinary cases, where bad men are suddenly reformed, without the instrumentality of physical, moral, or rational causes, I believe that the organization of those parts of the body, in which the faculties of the mind are seated, undergoes a physical change;* and hence the expression of a “ new creature,” which is made use of in the Scriptures to denote this change, is proper in a literal, as well as a figurative sense. It is probably the beginning of that perfect renovation of the human body, which is predicted by St. Paul in the following words—“ For our conversation “ is in heaven, from whence we look for the Savi-

* St. Paul was suddenly transformed from a persecutor into a man of a gentle and amiable spirit. The manner in which this change was effected upon his mind, he tells us in the following words—“ Neither circumcision availeth “ any thing, nor uncircumcision, but a new creature.—“ From henceforth let no man trouble me; for I bear in “ my body, the marks of our Lord Jesus.” Galatians, vi. 15. 17.

“ our, who shall change our vile bodies, that they
“ may be fashioned according to his own glorious
“ body.” I shall not pause to defend myself
against the charge of enthusiasm in this place ; for
the age is at length arrived, so devoutly wished
for by Dr. Cheyne, in which men will not be de-
terred in their researches after truth, by the ter-
ror of odious or unpopular names.

I cannot help remarking under this head, that if the conditions of those parts of the human body which are connected with the human soul, influence morals, the same reason may be given for a virtuous education, that has been admitted for teaching music and the pronunciation of foreign languages, in the early and yielding state of those organs, which form the voice and speech. Such is the effect of a moral education, that we often see its fruits in advanced stages of life, after the religious principles which were connected with it, have been renounced ; just as we perceive the same care in a surgeon in his attendance upon patients, after the sympathy which first produced this care, has ceas- ed to operate upon his mind. The boasted moral- ity of the Deists, is I believe, in most cases, the off- spring of habits, produced originally by the prin- ciples and precepts of Christianity. Hence appears the wisdom of Solomon’s advice—“ Train up a
“ child

“ child in the way he should go, and when he is
“ old he will not,” I had almost said, he cannot
“ depart from it.”

Thus have I enumerated the principal causes, which act mechanically upon morals. If from the combined action of physical powers that are opposed to each other, the moral faculty should become stationary, or if the virtue or vice produced by them, should form a neutral quality, composed of both of them, I hope it will not call in question the truth of our general propositions. I have only mentioned the effects of physical causes in a simple state.*

It might help to enlarge our ideas upon this subject, to take notice of the influence of the different stages of society, of agriculture and commerce, of soil and situation, of the different degrees of cultivation of taste, and of the intellectual powers, of the different forms of government, and lastly, of the different professions and occupations of mankind, upon the moral faculty ; but as these act

* The doctrine of the influence of physical causes on morals is happily calculated to beget charity towards the failings of our fellow creatures. Our duty to practise this virtue is enforced by motives drawn from science, as well as from the precepts of christianity.

indirectly only, and by the intervention of causes that are unconnected with matter, I conceive they are foreign to the business of the present inquiry. If they should vary the action of the simple physical causes in any degree, I hope it will not call in question the truth of our general propositions, any more than the compound action of physical powers, that are opposed to each other. There remain only a few more causes which are of a compound nature, but so nearly related to those, which are purely mechanical, that I shall beg leave to trespass upon your patience, by giving them a place in my oration.

The effects of imitation, habit and association upon morals, would furnish ample matter for investigation. Considering how much the shape, texture, and conditions of the human body, influence morals, I submit it to the consideration of the ingenious, whether in our endeavours to imitate moral examples, some advantage may not be derived, from our copying the features and external manners of the originals. What makes the success of this experiment probable is, that we generally find men, whose faces resemble each other, have the same manners and dispositions. I infer the possibility of success in an attempt to imitate originals in a manner that has been mentioned, from the facility with which domestics acquire a resemblance

resemblance to their masters and mistresses, not only in manners, but in countenance, in those cases where they are tied to them by respect and affection. Husbands and wives also, where they possess the same species of face, under circumstances of mutual attachment, often acquire a resemblance to each other.

From the general detestation in which hypocrisy is held both by good and bad men, the mechanical effects of habit upon virtue, have not been sufficiently explored. There are, I am persuaded, many instances where virtues have been assumed by accident, or necessity, which have become real from habit, and afterwards derived their nourishment from the heart. Hence the propriety of Hamlet's advice to his mother—

“ Assume a virtue, if you have it not,
“ That monster, custom, who all sense doth eat,
“ Of habits evil, is angel, yet in this,
“ That to the use of actions fair and good,
“ He likewise gives a frock or livery,
“ That aptly is put on—Refrain to-night,
“ And that shall lend a kind of easiness,
“ To the next abstinence ; the next more easy,
“ For use can almost change the stamp of na-
“ ture,
“ And

“ And master even the devil, or throw him out,
“ With wondrous potency.”

The influence of ASSOCIATION upon morals, opens an ample field for inquiry. It is from this principle, that we explain the reformation from theft and drunkennes in servants which we sometimes see produced by a draught of spirits in which tartar emetic had been secretly dissolved. The recollection of the pain and sickness excited by the emetic, naturally associates itself with the spirits, so as to render them both equally the objects of aversion. It is by calling in this principle only, that we can account for the conduct of Moses, in grinding the golden calf into a powder, and afterwards dissolving it (probably by means of hepar sulphuris) in water, and compelling the children of Israel to drink of it, as a punishment for their idolatry. This mixture is bitter and nauseating in the highest degree. An inclination to idolatry, therefore, could not be felt without being associated with the remembrance of this disagreeable mixture, and of course being rejected, with equal abhorrence. The benefit of corporal punishments, when they are of a short duration, depends in part upon their being connected by time and place, with the crimes for which they are inflicted. Quick as the thunder follows the

lightning,

lightning, if it were possible, should punishments follow the crimes, and the advantage of association would be more certain, if the spot where they were committed, were made the theatre of their expiation. It is from the effects of this association, probably, that the change of place and company produced by exile and transportation, has so often reclaimed bad men, after moral, rational, and physical means of reformation had been used to no purpose.

As SENSIBILITY is the avenue to the moral faculty, every thing which tends to diminish it tends also to injure morals.—The Romans owed much of their corruption to the sights of the contests of their gladiators, and of criminals, with wild beasts. For these reasons, executions should never be public. Indeed, I believe there are no public punishments of any kind, that do not harden the hearts of spectators, and thereby lessen the natural horror which all crimes at first excite in the human mind.

CRUELTY to brute animals is another means of destroying moral sensibility. The ferocity of savages has been ascribed in part to their peculiar mode of subsistence. Mr. Hogarth points out in his ingenious prints, the connection between cruelty to brute animals in youth, and murder in man-

hood.

hood. The Emperor Domitian prepared his mind by the amusement of killing flies, for all those bloody crimes which afterwards disgraced his reign. I am so perfectly satisfied of the truth of a connection between morals, and humanity to brutes, that I shall find it difficult to restrain my idolatry for that legislature, that shall first establish a system of laws, to defend them from outrage and oppression.

In order to preserve the vigour of the moral faculty, it is of the utmost consequence to keep young people as ignorant as possible of those crimes that are generally thought most disgraceful to human nature. Suicide, I believe, is often propagated by means of news-papers. For this reason, I should be glad to see the proceedings of our courts kept from the public eye, when they expose, or punish monstrous vices.

The last mechanical method of promoting morality that I shall mention, is to keep sensibility alive, by a familiarity with scenes of distress from poverty and disease. Compassion never awakens in the human bosom, without being accompanied by a train of sister virtues—hence the wise man justly remarks, that “ By the sadness of the countenance, the heart is made better.”

A late

A late French writer in his prediction of events that are to happen in the year 4000, says "That mankind in that æra shall be so far improved by religion and government, that the sick and the dying shall no longer be thrown together with the dead, into splendid houses, but shall be relieved and protected in a connection with their families and society." For the honour of humanity, an institution * destined for that distant period, has lately been founded in this city, that shall perpetuate the year 1786 in the history of Pennsylvania. Here the feeling heart, the tearful eye, and the charitable hand, may always be connected together, and the flame of sympathy, instead of being extinguished in taxes, or expiring in a solitary blaze by a single contribution, may be kept alive, by constant exercise. There is a necessary connection between animal sympathy and good morals. The priest and the Levite, in the New Testament, would probably have relieved the poor man who fell among thieves, had accident brought them near enough to his wounds. The unfortunate Mrs. Bellamy was rescued from the dreadful purpose of drowning herself, by nothing but the distress of a child, rending the air with its cries for

* A public Dispensary.

bread. It is probably owing in some measure to the connection between good morals and sympathy that the fair sex in every age, and country, have been more distinguished for virtue, than men—for how seldom do we hear of a woman, devoid of humanity?—

Lastly, **ATTRACTION**, **COMPOSITION**, and **DECOMPOSITION**, belong to the passions as well as to matter. Vices of the same species attract each other with the most force—hence the bad consequences of crowding young men (whose propensities are generally the same) under one roof, in our modern plans of education. The effects of composition and decomposition upon vices, appear in the meanness of the school-boy, being often cured by the prodigality of a military life, and by the precipitation of avarice, which is often produced by ambition and love.*

* A citizen of Philadelphia had made many unsuccessful attempts to cure his wife of drinking ardent spirits. At length, despairing of her reformation, he purchased a hogshead of rum, and after tapping it, left the key in the door where he had placed it as if he had forgotten it. His design was to give her an opportunity of destroying herself, by drinking as much as she pleased. The woman suspected this to be his design, and suddenly left off drinking. Anger here became the antidote of intemperance.

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If physical causes influence morals in the manner we have described, may they not also influence religious principles and opinions?—I answer in the affirmative; and I have authority, from the records of physic, as well as from my own observations, to declare, that religious melancholy and madness, in all their variety of species, yield with more facility to medicine, than simply to polemical discourses, or to casuistical advice. But this subject is foreign to the business of the present inquiry.

From a review of our subject, we are led to contemplate with admiration, the curious structure of the human mind. How distinct are the number, and yet how united! How subordinate and yet how coequal are all its powers! How wonderful is the action of the soul upon the body! Of the body upon the soul!—And of the Divine Spirit upon both! What a mystery is the mind of man to itself!—O! nature!—Or to speak more properly,—O! THOU GOD OF NATURE!—In vain do we attempt to scan THY immensity, or to comprehend THY various modes of existence, when a single particle of light issued from THYSELF, and kindled into intelligence in the bosom of man, thus dazzles and confounds our understandings!—

The extent of the moral powers and habits in man is unknown. It is not improbable, but the human mind contains principles of virtue, which have never yet been excited into action. We behold with surprise the versatility of the human body in the exploits of tumblers and rope-dancers. Even the agility of a wild beast has been demonstrated in a girl in France, and an amphibious nature has been discovered in the human species, in a young man in Spain. We listen with astonishment to the accounts of the *memories* of Mithridates, Cyrus, and Servin. We feel a veneration bordering upon divine homage, in contemplating the stupendous *understandings* of Lord Verulam and Sir Isaac Newton; and our eyes grow dim, in attempting to pursue Shakespeare and Milton in their immeasurable flights of *imagination*. And if the history of mankind does not furnish similar instances of the versatility and perfection of our species in virtue, it is because the moral faculty has been the subject of less culture and fewer experiments than the body, and the intellectual powers of the mind. From what has been said the reason of this is obvious. Hitherto the cultivation of the moral faculty has been the business of parents, schoolmasters, and divines.* But if the principles

* The people commonly called Quakers and the Methodists, make use of the greatest number of physical remedies

principles, we have laid down, be just, the improvement and extension of this principle should be equally the business of the legislator, the natural philosopher, and the physician; and a physical regimen should as necessarily accompany a moral precept, as directions with respect to the air, exercise, and diet, generally accompany prescriptions for the consumption, and the gout. To encourage us to undertake experiments for the improvement of morals, let us recollect the success of philosophy in lessening the number, and mitigating the violence of incurable diseases. The intermitting fever, which proved fatal to two of the monarchs of Britain, is now under absolute subjection to medicine. Continual fevers are much less fatal than formerly. The small-pox is disarmed of its mortality by inoculation, and even the tetanus and the cancer have lately received a check in their ravages upon mankind. But medicine has done more—It has

in their religious and moral discipline, of any sects of Christians—and hence we find them every where distinguished for their good morals. There are several excellent *physical* institutions in other churches; and if they do not produce the same moral effects, that we observe from physical institutions among those two modern sects, it must be ascribed to their being more neglected by the members of those churches.

penetrated the deep and gloomy abyss of death, and acquired fresh honours in his cold embraces.

— Witness the many hundred people who have lately been brought back to life by the successful efforts of the humane societies, which are now established in many parts of Europe, and in some parts of America. Should the same industry and ingenuity, which have produced these triumphs of medicine over diseases and death, be applied to the moral science, it is highly probable, that most of those baneful vices, which deform the human breast, and convulse the nations of the earth, might be banished from the world. I am not so sanguine as to suppose, that it is possible for man to acquire so much perfection from science, religion, liberty, and good government, as to cease to be mortal; but I am fully persuaded, that from the combined action of causes, which operate at once upon the reason, the moral faculty, the passions, the senses, the brain, the nerves, the blood, and the heart, it is possible to produce such a change in his moral character, as shall raise him to a resemblance of angels—nay more, to the likeness of GOD himself.

— The state of Pennsylvania still deplores the loss of a man, in whom not only reason and revelation, but many of the physical causes that have been enumerated, concurred to produce such attainments

tainments in moral excellency, as have seldom appeared in a human being. This amiable citizen considered his fellow creature, man, as God's extract, from his own works; and whether this image of himself was cut out from ebony or copper—whether he spoke his own, or a foreign language—or whether he worshipped his Maker with ceremonies, or without them, he still considered him as a brother, and equally the object of his benevolence. Poets and historians, who are to live hereafter, to you I commit his panegyric; and when you hear of a law for abolishing slavery in each of the American States, such as was passed in Pennsylvania, in the year 1780—when you hear of the kings and queens of Europe, publishing edicts for abolishing the trade in human souls—and lastly, when you hear of schools and churches, with all the arts of civilized life, being established among the nations of Africa, then remember and record, that this revolution in favour of human happiness, was the effect of the labours, the publications, the private letters, and the prayers of **ANTHONY BENEZET.** *—

* This worthy man was descended from an ancient and honourable family that flourished in the court of Lewis the XIV.

I return from this digression, to address myself in a particular manner to you, VENERABLE SAGES and FELLOW CITIZENS in the REPUBLIC OF LETTERS.—The influence of philosophy, we have been told, has already been felt in courts. To increase, and complete this influence, there is nothing more necessary, than for the numerous literary societies in Europe and America, to add

XIV. With liberal prospects in life he early devoted himself to teaching an English school; in which, for industry, capacity, and attention to the morals and principles of the youth committed to his care, he was without an equal. He published many excellent tracts against the African trade, against war, and the use of spirituous liquors, and one in favour of civilizing and Christianizing the Indians. He wrote to the queen of Great Britain, and the queen of Portugal, to use their influence in their respective courts to abolish the African trade. He also wrote an affectionate letter to the king of Prussia, to dissuade him from making war. The history of his life affords a remarkable instance how much it is possible for an individual to accomplish in the world; and that the most humble stations do not preclude good men from the most extensive usefulness. He bequeathed his estate (after the death of his widow) to the support of a school for the education of negro children, which he had founded and taught for several years before he died. He departed this life in May 1784, in the 71st year of his age, in the meridian of his usefulness, universally lamented by persons of all ranks and denominations.

the SCIENCE OF MORALS to their experiments and inquiries. The godlike scheme of Henry the IV. of France, and of the illustrious queen Elizabeth of England, for establishing a perpetual peace in Europe, may be accomplished without a system of jurisprudence, by a confederation of learned men, and learned societies. It is in their power, by multiplying the objects of human reason, to bring the monarchs and rulers of the world under their subjection, and thereby to extirpate war, slavery, and capital punishments, from the list of human evils. Let it not be suspected that I detract by this declaration, from the honour of the Christian religion. It is true, Christianity was propagated without the aid of human learning; but this was one of those miracles, which was necessary to establish it, and which, by repetition, would cease to be a miracle. They misrepresent the Christian religion, who suppose it to be wholly an internal revelation, and addressed only to the moral powers of the mind. The truths of Christianity afford the greatest scope for the human understanding, and they will become intelligible to us, only in proportion as the human genius is stretched by means of philosophy, to its utmost dimensions. Errors may be opposed to errors; but truths, upon all subjects, mutually support each other. And perhaps one reason, why some parts of the

Christian revelation are still involved in obscurity, may be occasioned by our imperfect knowledge of the phenomena and laws of nature. The truths of philosophy and Christianity, dwell alike in the mind of the Deity, and reason and religion are equally the offspring of his goodness. They must, therefore, stand and fall together. By reason, in the present instance, I mean the power of judging of truth, as well as the power of comprehending it. Happy æra!—When the divine and the philosopher shall embrace each other, and unite their labours for the reformation and happiness of mankind!—

ILLUSTRIOUS COUNCILLORS and SENATORS of Pennsylvania! * I anticipate your candid reception of this feeble effort to increase the quantity of virtue in our republic. It is not my business to remind you of the immense resources for greatness, which nature and Providence have bestowed upon our state. Every advantage which France has derived from being placed in the centre of Europe, and which Britain has derived from

* The president, and supreme executive council, and the members of the general assembly of Pennsylvania, attended the delivery of the oration, in the hall of the University, by invitation from the Philosophical Society.

her mixture of nations, Pennsylvania has opened to her. But my business at present, is to suggest the means of promoting the happiness, not the greatness, of the state. For this purpose, it is absolutely necessary that our government, which unites into one all the minds of the state, should possess, in an eminent degree, not only the understanding, the passions, and the will, but above all, the moral faculty, and the conscience of an individual. Nothing can be politically right, that is morally wrong ; and no necessity can ever sanctify a law, that is contrary to equity. **VIRTUE** is the soul of a republic. To promote this, laws for the suppression of vice and immorality will be as ineffectual, as the increase and enlargement of gaols. There is but one method of preventing crimes, and of rendering a republican form of government durable, and that is, by disseminating the seeds of virtue and knowledge through every part of the state, by means of proper modes and places of education, and this can be done effectually only by the interference and aid of the legislature. I am so deeply impressed with the truth of this opinion, that were this evening to be the last of my life, I would not only say to the asylum of my ancestors, and my beloved native country, with the patriot of Venice, “*Esto perpetua,*” but I

would add, as the last proof of my affection for her, my parting advice to the guardians of her liberties, “ To establish and support PUBLIC SCHOOLS in every part of the state.”

AN
INQUIRY
INTO THE
EFFECTS
OF
SPIRITUOUS LIQUORS
UPON THE
HUMAN BODY,
And their INFLUENCE upon the
HAPPINESS OF SOCIETY.

A N

I N Q U I R Y, &c.

BY Spirits I mean all those liquors which are obtained by distillation from fermented juices or substances of any kind. These liquors were formerly used only for medicine—They now constitute a principal part of the drinks of many countries.

Since the introduction of spirituous liquors into such general use, physicians have remarked that a number of new diseases have appeared among us, and have described many new symptoms as common to old diseases. Spirits in their first operation are stimulating upon the system. They quicken the circulation of the blood, and produce some heat in the body. Soon afterwards, they become

become what is called sedative ; that is, they diminish the action of the vital powers, and thereby produce languor and weakness.

The effects of spirituous liquors upon the human body, are sometimes slow in their appearance. A strong constitution, especially if it be assisted with constant and hard labour, will counteract the destructive effects of spirits for many years, but in general they produce the following diseases :

1. *A sickness at the stomach*, and *vomiting* in the morning. This disorder is generally accompanied by a want of appetite for breakfast. It is known by tremors in the hands, insomuch that persons who labour under it, are hardly able to lift a tea cup to their heads, till they have taken a dose of some cordial liquor. In this disorder, a peculiar paleness, with small red streaks, appear in the cheeks. The flesh of the face, at the same time, has a peculiar fulness and flabbiness, which are very different from sound and healthy fat.

2. *An universal dropsy*. This disorder begins first in the lower limbs, and gradually extends itself throughout the whole body. I have been told that the merchants in Charleston, South-Carolina, never trust the planters when spirits have produced

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the first symptom of this disorder upon them. It is very natural to suppose that industry and virtue have become extinct in that man, whose legs and feet are swelled, from the use of spirituous liquors.

3. *Obstruction of the liver.* This disorder produces other diseases, such as an inflammation, which sometimes proves suddenly fatal—the jaundice—and a dropsy in the belly.

4. *Diabetes.*

5. *Pains in the limbs,* accompanied by a sense of burning in the palms of the hands and soles of the feet. This disease has sometimes been called the Jamaica Rheumatism.

6. *Hoarseness and cough.* These complaints predispose to fatal attacks of Pneumonia Notha.

7. *The Epilepsy.* 8. *Madness.* 9. *Palsy,* and, 10. *The Apoplexy* complete the group of diseases produced by spirituous liquors.*

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* It has been remarked that those drunkards in whom a fit of intoxication is terminated by sleep and stupor, die of palsy,

I do not assert that these disorders are never produced by any other causes, but I maintain that spirituous liquors are the most frequent causes of them, and that when a predisposition to them is produced by other causes, they are rendered more certain and more dangerous by the intemperate use of spirits.

I have only named a few of the principal disorders which are produced by spirituous liquors. It would take up a volume to describe how much other disorders natural to the human body, are increased and complicated by them. Every species of inflammatory and malignant fever, is rendered more frequent and more dangerous by the use of spirituous liquors.

The danger to life from the diseases which have been mentioned is well known. I do not think it extravagant therefore to repeat here, what has been often said, that spirituous liquors destroy more lives than the sword. War has its intervals of destruction—but spirits operate at all times and seasons upon human life. The ravages of war are confined to but one part of the human species,

palsy, gout, and gravel; while those in whom it terminates by copious sweats, vomitings or stools, or by a discharge of pale urine, perish by diabetes and dropsy.

viz.

viz. to men; but spirits act too often upon persons who are exempted from the dangers of war by age or sex; and lastly, war destroys only those persons who allow the use of arms to be lawful, whereas spirits insinuate their fatal effects among people, whose principles are opposed to the effusion of human blood.

But the effects of ardent spirits upon the human body, do not end in the destruction of life. They derange and even deform a *dead* body so as to render it a loathsome addition to the clay which conceals it from human view after death. This has been frequently demonstrated in the dissection of persons who have been destroyed by the use of ardent spirits. They harden and contract the fibres of the stomach and bowels, or induce in them abscesses and gangrene—they produce schirri in the viscera—they contract the diameter of the sanguiferous and bronchial vessels—they induce ossifications in the tendons, arteries, and pleura, and lastly—they produce a peculiar crispness in the hair of the head, insomuch that the wig-makers in London give much less for it, than for the hair of sober people.

If we advance a step further and examine the effects of spirituous liquors upon the *mind*, the prospect

prospect will be still more distressing and terrible. Their first effects here, shew themselves in the *temper*. I have constantly observed men who are intoxicated in any degree with spirits, to be peevish and quarrelsome; after a while they lose by degrees the *moral* sense. They violate promises and engagements without shame or remorse. From these deficiencies in veracity and integrity, they pass on to crimes of a more heinous nature. It would dishonour human nature only to name them.

The next operation of ardent spirits is upon the *understanding*. This sublime power of the mind is first *debilitated* in hard drinkers.—They discover a torpor in every mental exertion, even when they are not under the immediate influence of spirits. To this debility in the understanding succeed the loss of *memory*, and the *perversion* of all the intellectual powers in *melancholy* and *madness*, and in some cases the total *extinction* of them in *idiotism*.

Let us next turn our eyes from the effects of spirits upon the body and mind, to their effects upon *property*; and here fresh scenes of misery open to our view. Among the inhabitants of cities, they produce debts, disgrace, and bankruptcy. Among farmers,

farmers, they produce idleness with its usual consequences, such as houses without windows, barns without roofs, gardens without enclosures, fields without fences, hogs without yokes, sheep without wool, meagre cattle, feeble horses, and half clad dirty children, without principles, morals, or manners. This picture is not exaggerated. I appeal to the observations of my countrymen, whether such scenes of wretchedness do not follow the tracks of spirituous liquors, in every part of the United States.

Thus have I in a few words pointed out the effects of spirituous liquors upon the bodies, minds, and estates of my fellow-citizens.—Their mischiefs may be summed up in a few words. They fill our church-yards with premature graves, they deface the image of God in the soul, they derange or destroy the intellectual powers, they fill the sheriff's docket with executions, they croud our hospitals with patients, and our jails with criminals, they lead to places of public ignominy and punishment, and lastly, they people the regions—but it belongs to another profession to shew their terrible consequences in the future world.

After this melancholy detail of the pernicious effects of spirituous liquors upon the body, it may not

be improper to enumerate the usual causes which lead to their intemperate use. They are, 1. Exposure to excessive heat and cold. 2. Hard labour, disproportioned to the strength of the body. 3. Hunger, more especially those degrees of it which have been excited by long intervals between meals. 4. Long speaking, or long sittings in company. 5. Smoking and chewing tobacco. 6. Taking medicines in ardent spirits. 7. Breeding sickness. 8. Great domestic care. I have observed this cause to produce it, in several instances in women. 9. Domestic vexations, more especially conjugal infelicity. 10. The infection of company that is addicted to strong drink. 11. Debt. 12. The corrodings of a guilty conscience; and, 13. Solitude where the mind does not possess resources in books, or in religion. It is remarkable that an intemperate use of ardent spirits is seldom produced by that grief which follows the death of relations or friends.

In the use of spirits, there are certain progressive stages which deserve to be mentioned. Men begin generally by drinking them in a diluted state, at dinner only. They next drink them in the same state in the afternoon and evening. In the course of a few years, they call for them in the forenoon, and soon afterwards before breakfast, encreasing their

their strength from time to time until they finally drink them in an undiluted state during every hour of the night. I have known several persons who have passed through all the above stages of intemperance, in whom the pulse of life seemed to be supported for several months before their death, only by drinking from one to two quarts of raw spirits every night.

I shall now proceed to combat some prejudices in favour of the use of spirituous liquors.

The *three* occasions in which spirits have been thought most necessary and useful are the following :

1. In very cold weather.

2. In very warm weather. And,

3. In times of hard labour.

1. There cannot be a greater error than to suppose that spirituous liquors lessen the effects of cold upon the body. On the contrary, I maintain that they always render the body more liable to be affected and injured by cold. The temporary warmth they produce, is always succeeded

by chilliness. If any thing, besides warm clothing and exercise, be necessary to warm the body in cold weather, a plentiful meal of wholesome food is at all times sufficient for that purpose. This, by stimulating the stomach, invigorates the whole system, and thus renders it less sensible of the cold.

2. It is equally absurd to suppose that spirituous liquors lessen the effects of heat upon the body. So far from it, they rather increase them. They add an internal heat to the external heat of the sun ; they dispose to fevers and inflammations of the most dangerous kind ; they produce preternatural sweats which weaken, instead of an uniform and gentle perspiration, which exhilarates the body. Half the diseases which are said to be produced by warm weather, I am persuaded are produced by the spirits which are swallowed to lessen its effects upon the system.*

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* "I aver from my own knowledge and custom (says Dr. Moseley*) as well as the custom and observations of many other people, that those who drink nothing but water, or make it their principal drink, are but little affected by the climate, and can undergo the greatest fatigue without inconvenience. Those who use water for their common

* Diseases of tropical climates.

drink

3. I maintain with equal confidence, that spirituous liquors do not lessen the effects of hard labour upon the body. Look at the horse, with every muscle of his body swelled from morning till night in the plough, or the team, does he make signs for spirits to enable him to cleave the earth, or to climb a hill?—No. He requires nothing but cool water and substantial food. There is neither strength nor nourishment in spirituous liquors. If they produce vigour in labour, it is of a transient nature, and is always succeeded by a sense of weakness and fatigue. These facts are founded in observation; for I have repeatedly seen those men perform the greatest exploits in work both as to their degrees and duration, who never tasted spirituous liquors.

drink will never be subject to troublesome or dangerous diseases, and the only inconvenience attending water drinkers is, that their appetite is so keen that they eat more than they ought.”

“ Rum (says Dr. Bell) whether used habitually, moderately, or in excessive quantities, in the West-Indies, always diminishes the strength of the body, and therefore renders the men more susceptible of disease, and unfit for any service in which vigour or activity is required.” Inquiry into the causes which produce, and the means of preventing diseases among British officers, soldiers, and others in the West-Indies.

But are there no conditions of the human body in which spirituous liquors are required? Yes, there are; 1st. In those cases where the body has been exhausted by any causes, and faintness, or a stoppage in the circulation of the blood has been produced, the sudden stimulus of spirits may be necessary. In this case we comply strictly with the advice of Solomon, who confines the use of "strong drink," only to him "that is ready to perish!" and 2dly. When the body has been long exposed to wet weather, and more especially if cold be joined with it, a moderate quantity of spirits is not only proper but highly useful to obviate debility, and thus to prevent a fever. I take these to be the only two cases that can occur, in which spirituous liquors are innocent or necessary.

But if we reject spirits from being part of our drinks, what liquors shall we substitute in the room of them? For custom, the experience of all ages and countries, and even nature herself, all seem to demand drinks more grateful and more cordial than simple water.

To this I shall reply, by recommending in the room of spirits, in the first place,

1. CYDER. This excellent liquor contains a small quantity of spirit, but so diluted and blunted, by

by being combined with an acid and a large quantity of saccharine matter and water, as to be perfectly inoffensive and wholesome. It disagrees only with persons subject to the rheumatism, but it may be rendered inoffensive to such people by extinguishing a red hot iron in it, or by diluting it with water. It is to be lamented that the late frosts in the spring often deprive us of the fruit which affords this liquor. But the effects of these frosts have been in some measure obviated, by giving an orchard a north-west exposure, so as to check too early vegetation, and by kindling two or three large fires of brush and straw to the windward of the orchard, the evening before we expect a night of frost. This last expedient, has in many instances within the compass of my knowledge, preserved the fruit of an orchard, to the great joy and emolument of the ingenious husbandman.

2. BEER is a wholesome liquor compared with spirits. The grain from which it is obtained is not liable like the apple, to be affected by frost, and therefore it can always be procured at a moderate expense. It abounds with nourishment—hence we find many of the common people in Great Britain, endure hard labour with no other food than a quart or three pints of this liquor, with a few pounds of bread a-day.

3. WINE is likewise a wholesome liquor, compared with spirits. The low wines of France, I believe, could be drunken at a less expence than spirits, in this country. The peasants in France, who drink these liquors in large quantities, are a healthy and sober body of people. Wines of all kinds yield, by chemical analysis, the same principles as cyder, but in different proportions ; hence they are both cordial and nourishing. It has been remarked, that few men ever become *habitual* drunkards upon wine. It derives its relish principally from company, and is seldom, like spirituous liquors, drank in a chimney corner, or in a closet. The effects of wine upon the *temper* are likewise in most cases, directly opposite to those that were mentioned of spirituous liquors. It must be a bad heart, indeed, that is not rendered more cheerful and more generous, by a few glasses of wine*.

4. MELAS-

* If two barrels of cyder fresh from the press, are boiled into one, and afterwards fermented, and kept for two or three years in a dry cellar, it affords a liquor which (according to the quality of the apple from which the cyder is made) has the taste of Malaga or Rhenish wine. This liquor, when mixed with water, affords a very agreeable drink in summer. I have taken the liberty to call it *Pomona wine*. Another method of obtaining a pleasant wine from the apple, is to add to four and twenty gallons of new cyder, three gallons of a syrup made from the expressed juice of sweet apples. When thoroughly

4. MELASSES and WATER compose another excellent substitute for spirits. It is both cordial and nourishing.

5. The SUGAR MAPLE tree affords a thin JUICE in summer, which is cooling and refreshing. It has long been used in Connecticut, for this purpose in the time of harvest. The settlers in the western counties of Pennsylvania and New-York, will do well to suffer a few of the trees which yield this pleasant juice, to remain in all their fields. They may prove the means, not only of saving their children and grand-children many hundred pounds, but of saving their bodies from disease and death, and their souls from misery beyond the grave.

6. VINEGAR and WATER sweetened with sugar or molasses, is an agreeable drink in warm weather. I beg leave to recommend this wholesome liquor to reapers in a particular manner. It is pleasant and cooling. It promotes perspiration, and resists putrefaction. Vinegar and water constituted the only drink of the soldiers of the Roman republic; and it is well known that they marched and fought in a warm climate, and being thoroughly fermented, and kept for some time, it becomes fit for use.

neath

neath a load of arins that weighed sixty pounds. Boaz, a wealthy farmer in Palestine, we find, treated his reapers with nothing but bread dipped in vinegar. Under this head, I should not neglect to recommend BUTTER MILK and WATER, or SOUR MILK (commonly called bonneclabber) and WATER. It will be rendered more grateful by the addition of a little sugar. PUNCH is likewise calculated to lessen the effects of heat, and hard labour upon the body. The spirit in this liquor is blunted by its union with the vegetable acid. Hence it possesses, not only the constituent parts, but most of the qualities of cyder and wine. To render this liquor perfectly innocent and wholesome, it must be drunken *weak*, in *moderate* quantities, and *only* in warm weather. Say not, that spirits have become necessary in harvest, from habit and the custom of the country. The custom of swallowing this liquid fire, is a bad one, and the habit of it may be broken. Let half a dozen farmers in a neighbourhood, combine to allow higher wages to their reapers than are common, and a sufficient quantity of *any* of the liquors I have recommended, and they may soon abolish the practice of giving them spirits. They will in a little while be delighted with the good effects of their association. Their grain will be sooner and more carefully gathered into their barns, and an hundred disagreeable

scenes

scenes of sickness and contention will be avoided, which always follow in a greater or less degree the use of spirituous liquors.

To enable the body to support the waste of its strength by labour, the stomach should be *constantly*, but *moderately*, stimulated by aliment of a particular kind. Labourers bear with great difficulty long intervals between their meals. They should always eat four or five times a-day in time of harvest, or at other seasons of great bodily exertion. The food at these times should be *solid*, consisting chiefly of salted meat. The vegetables used with it should possess some activity. Onions and garlic are of a most cordial nature. These vegetables composed part of the diet which enabled the Israelites to endure, in a warm climate, the heavy tasks imposed upon them by their Egyptian masters. They were likewise eaten by the Roman farmers to repair the waste of their strength by the toils of harvest. But further ; There are certain **SWEET SUBSTANCES** which support the body in labour. The negroes in the West Indies grow fat and strong by drinking the juice of the sugar cane in the season of grinding it. The Jewish soldiers were invigorated by occasionally eating raisins and figs. A bread composed of wheat flour, molasses, and ginger, (composing what is called ginger bread), and taken

taken in small quantities, during the day, is happily calculated to obviate the debility which is so apt to be brought on by labour. All these substances, whether of an animal or vegetable nature, which have been mentioned, should be used by labouring people. They lessen the necessity for cordial drinks, and they impart *equal* and *durable* strength to every part of the system.

There are certain classes of people to whom I beg leave to suggest a caution or two upon the use of spirituous liquors.

1. Valetudinarians, especially those who labour under disorders of the stomach and bowels, are very apt to fly to spirits for relief. Let such people be cautious how they repeat this dangerous remedy. I have known many men and women, of excellent characters and principles, who have been betrayed by occasional doses of gin or brandy to ease the colic, into a love of spirituous liquors, insomuch that they have afterwards fallen sacrifices to their fatal effects. The different preparations of opium are a thousand times more safe and innocent than spirituous liquors, in all spasmodic affections of the stomach and bowels. So apprehensive am I of the danger of contracting a love for spirituous liquors, by accustoming the stomach

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to their stimulus, that I think the fewer medicines we exhibit in spirituous vehicles the better.

2. Some people, from living in countries subject to the intermitting fever, endeavour to fortify themselves against it by two or three glasses of bitters made with spirits every day. There is great danger of men becoming fots from this practice. Besides, this mode of preventing intermittents is by no means a certain one. A much better security against them is to be found in the Jesuits' bark. A tea-spoonful of this excellent medicine taken every morning during the sickly season, has in many instances preserved whole families, in the neighbourhood of rivers and mill-ponds, from fevers of all kinds. If Jesuits' bark cannot be had, a gill or half a pint of a strong infusion of centaury, camomile, wormwood, or rue, in *water*, with a little calamus mixed with it, may be taken with nearly the same advantage as the bark, every morning. Those who live in a sickly part of the country, and cannot procure the bark, or any of the bitters which have been mentioned, I would advise to avoid the morning and evening air in the sickly months—to kindle fires in their houses on damp days, and in cool evenings throughout the whole summer, and to put on woollen clothing about,

about the first week in September. The last part of these directions applies only to the inhabitants of the middle states. These cautions, I am persuaded, will be more effectual in preventing autumnal fevers than the best preparations that can be made from bitters in spirits.

3. Men, who follow professions that require a constant exercise of the mind or body, or perhaps both, are very apt to seek relief from fatigue in spirituous liquors. To such persons I would beg leave to recommend the use of TEA instead of spirits. This gentle stimulus, by restoring excitement, removes fatigue, and invigorates the whole system. I am no advocate for the general or excessive use of tea. When drunken too strong, it is hurtful, especially to the female constitution; but when taken of a moderate degree of strength, and in moderate quantities, with sugar and cream, or milk, I believe it is in general innocent, and at all times to be preferred to spirituous liquors. Anthony Benezet, one of the most industrious school-masters I ever knew, told me that he had been preserved from the love of spirituous liquors by contracting a love for tea in early life. Three or four dishes taken in an afternoon, carried off the fatigue of a whole day's labour in his school. This
worthy

worthy gentlemen lived to be 71 years of age, and afterwards died of an acute disease in the full exercise of all the faculties of the mind. *

To every class of my readers, I beg leave to suggest a caution against the use of TODDY. I acknowledge that I have known some men, who, by limiting its strength constantly by measuring the spirit and water, and who by drinking it *only* at their meals, have drunken toddy for many years without suffering in any degree from it : but I have known many more who have been insensibly led from drinking toddy for their constant drink, to take drams in the morning, and have afterwards paid their lives as the price of their folly. I shall select one case from among many, to shew the ordinary progress of intemperance in the use of spiri-

* An old and intelligent sea captain has left upon record, the following testimony in favour of tea, coffee, and chocolate, in preference to spirituous liquors, in supporting the body under fatigue. "I have always observed (says he) "when sailors drink *tea* it weans them from the thoughts "of drinking strong liquors, and pernicious grog, and with "tea they are soon contented. Not so, with whatever will "intoxicate, be it what it will. This has always been "my remark. I therefore, always encouraged it without "their knowing why. Coffee has the same good effect. "Also cocoa, or chocolate." — *Forell's Voyage from Calcutta to the Merqui Archipelago.*

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tuous liquors.—A gentleman, once of a fair and sober character, in the city of Philadelphia, for many years drank toddy as his constant drink. From this he proceeded to drink grog. After a while nothing would satisfy him but slings made of equal parts of rum and water, with a little sugar. From slings he advanced to raw rum—and from common rum to Jamaica spirits. Here he rested for a few months ; but at last, he found even Jamaica spirits were not strong enough to warm his stomach, and he made it a constant practice to throw a table spoonful of ground pepper into each glass of his spirits, in order (to use his own expression) “ to take off their coldness.” It is hardly necessary to add, that he soon afterwards died a martyr to his own intemperance.

I shall conclude what has been said of the effects of spirituous liquors with two observations—
1. A people corrupted by strong drink cannot long be a *free* people. The rulers of such a community will soon partake of the vices of that mass, from which they were secreted, and all our laws and governments will, sooner or later, bear the same marks of the effects of spirituous liquors which were described formerly upon individuals. I submit it therefore to the consideration of our rulers, whether more laws should not be made to

increase the expense and lessen the consumption of spirituous liquors, and whether some mark of public infamy should not be inflicted by law upon every man, convicted before a common magistrate of drunkennes.

The second observation I shall offer, is of a serious nature. It has been remarked, that the Indians have diminished every where in America since their connections with the Europeans. This has been justly ascribed to the Europeans having introduced spirituous liquors among them. Let those men, who are every day turning their backs upon all the benefits of cultivated society, to seek habitations in the neighbourhood of Indians, consider how far this wandering mode of life is produced by the same cause which has scattered and annihilated so many Indian tribes. Long life, and the secure possession of property, in the land of their ancestors, were looked upon as blessings among the ancient Jews. For a son to mingle his dust with the dust of his father, was to act worthy of his inheritance; and the prospect of this honour often afforded a consolation even in death. However exalted, my countrymen, your ideas of liberty may be, while you expose yourselves by the use of spirituous liquors to this consequence of them, you are nothing more than the pioneers, or

in more slavish terms, “ the hewers of wood,” of your more industrious neighbours.

If the facts that have been stated, have produced in any of my readers, who have suffered from the use of spirituous liquors, a resolution to abstain from them hereafter, I must beg leave to inform them, that they must leave them off *suddenly* and *entirely*. No man was ever *gradually* reformed from drinking spirits. He must not only avoid tasting, but even smelling them, until long habits of abstinence have subdued his affection for them. To prevent his feeling any inconveniences from the sudden loss of their stimulus upon his stomach, he should drink plentifully of camomile or of any other bitter tea, or a few glasses of sound old wine every day. I have great pleasure in adding, that I have seen a number of people who have been *effectually* restored to health—to character—and to usefulness to their families and to society, by following this advice.

A N

I N Q U I R Y

INTO THE

CAUSES AND CURE

OF THE

PULMONARY CONSUMPTION.

INQUIRY, &c.

IN an Essay, entitled “Thoughts on the Pulmonary Consumption,” * I attempted to shew that this disorder was the effect of causes which induced general debility, and that the only hope of discovering a cure for it should be directed to such remedies as act upon the whole system. In the following inquiry, I shall endeavour to establish the truth of each of those opinions, by a detail of facts and reasonings, at which I only hinted in my former essay.

The method I have chosen for this purpose, is to deliver, and afterwards to support, a few general propositions.

* Medical Inquiries and Observations.

I shall begin by remarking,

I. That the Pulmonary Consumption is induced by predisposing debility.

This I infer, 1st, From the remote and exciting causes which produce it. The remote causes are pneumonia, catarrh, hæmoptysis, rheumatism, gout, asthma, scrophula, nervous and intermitting fevers, measles, repelled humours from the surface of the body, the venereal disease, obstructed menses, sudden growth about the age of puberty, grief, and all other debilitating passions of the mind; hypochondriasis, improper lactation, excessive evacuation of all kinds, more especially by stool, * cold and damp air, external violence acting upon the body; † and finally every thing that tends

* Sir George Baker relates in the second volume of the Medical Transactions, that Dr. Blanchard had informed him that he had seen the consumption brought on ten persons out of ninety, by excessive purging used to prepare the body for the small-pox. I have seen a case of consumption in a youth of 17, from the spitting produced by the intemperate use of segars.

† Dr. Lind says that out of 360 patients whom he attended between July 1st, 1758, and July 1st, 1760, in consumptions, the disorder was brought on *one fourth* of them, by falls, bruises, and strains received a year or two before the disease made its appearance.

directly

directly or indirectly to impair the vigour of the system.

The most frequent exciting cause of consumption is the alternate application of heat and cold to the whole external surface of the body, but all the remote causes which have been enumerated, operate as exciting causes of consumption when they act on previous debility. Original injuries of the lungs seldom induce this disorder except they first induce a debility of the whole system by a troublesome and obstinate cough.

2. From the occupations and habits of persons who are most liable to this disorder. These are studious men, and mechanics who lead sedentary lives in confined places; also women, and all persons of irritable habits, whether of body or mind.

3. From the period in which persons are most liable to be affected by this disorder. This is generally between the 18th and 36th year of life, a period in which the system is liable in a peculiar manner to most diseases which induce the disorder, and in which indirect debility is oftener produced than in any other stage of life, by the excessive exercises of the body and mind in the pursuits of business or pleasure.

I have conformed to authors, in fixing the period of consumptions between the 18th and 36th year of life—but it is well known that it sometimes appears in children, and frequently in persons beyond the 40th, or even 50th year of life.

II. The pulmonary consumption is a primary disease of the *whole* system. This I infer,

1. From the causes which produce it, acting upon the whole system.

2. From the symptoms of general debility which always precede the affection of the lungs. These symptoms are a quick pulse, especially towards evening; a heat and burning in the palms of the hands; faintness, head-ach, sickness at stomach, and an occasional diarrhoea. I have frequently observed each of these symptoms for several months before I have heard of a single complaint in the breast.

3. From the pulmonary consumption alternating with other diseases which obviously belong to the whole system. I shall briefly mention these diseases.

The RHEUMATISM. I have seen many cases in which this disease and the consumption have alternately

alternately, in different seasons or years, affected the system. In the winter of 1792, three clinical patients in the Pennsylvania hospital exemplified by their complaints the truth of this observation. They were relieved several times of a cough by pains in their limbs, and as often, the pains in their limbs seemed for a while to promise a cure to their pulmonary complaints.

The GOUT has often been observed to alternate with the pulmonary consumption, especially in persons in the decline of life. Dr. Sydenham describes a short cough continuing through the whole winter, as a symptom of gouty habits. A gentleman from Virginia died under my care in the spring of 1788, in the 45th year of his age, with all the symptoms of pulmonary consumption, which had frequently alternated with pains and a swelling in his feet.

The pulmonary consumption has been observed to alternate with MADNESS. Of this I have seen two instances, in both of which, the cough, and expectoration were wholly suspended during the continuance of the derangement of the mind. Dr. Mead mentions a melancholy case of the same kind in a young lady; and similar cases are to be met with in other authors. In all of them the disease proved

proved fatal. In one of the cases which came under my notice, the symptoms of consumption returned before the death of the patient.

I have likewise witnessed two cases in which the return of reason after madness, was suddenly succeeded by a fatal pulmonary consumption. Perhaps the false hopes, and even the cheerfulness which so universally occur in this disorder, may be resolved into a morbid state of the mind, produced by a general derangement of the whole system. So universal are the delusion and hopes of patients with respect to the nature and issue of this disorder, that I have never met with but one man, who, upon being asked what was the matter with him, answered unequivocally, "that he was in a consumption!"

Again—Dr. Bennet mentions a case of "A phthisical patient who was seized with a violent PAIN IN THE TEETH for two days, and in whom, during that time, every symptom of a consumption, except the leanness of the body, altogether vanished;" and he adds further, "that a defluxion on the lungs had often been relieved by SALIVARY EVACUATIONS.*

* Treatise of the Nature and Cure of Consumptions—Exercitation X.

I have

I have seen several instances in which the pulmonary symptoms have alternated with HEAD-
ACH and DYSPEPSIA,—also with pain and noise in one EAR. This affection of the ears sometimes continues throughout the whole disease without any remission of the pulmonary symptoms. I have seen one case of a discharge of matter from the left ear without being accompanied by either pain or noise.

In all our books of medicine are to be found cases of consumption alternating with ERUPTIONS ON THE SKIN.

And who has not seen the pulmonary symptoms alternately relieved, and reproduced by the appearance or cessation of a diarrhoea, or pains in the BOWELS.

To these facts I shall only add, under this head, as a proof of the consumption being a disease of the whole system, that it is always more or less relieved by the change which is induced in the system by pregnancy.

4. I infer that the pulmonary consumption is a disease of the whole system from its analogy with several other diseases which, though accompanied by

by local affections, are obviously produced by a morbid state of the whole system.

The Rheumatism, the Gout, the Measles, Small-pox, the different species of Cynanche—all furnish examples of the connection of local affections with a general disease; but the APOPLEXY, and the PNEUMONY, furnish the most striking analogies of local affection, succeeding a general disorder of the system in the pulmonary consumption.

The most frequent predisposing cause of apoplexy is a general debility of the system, produced by intemperance in eating and drinking. The phenomena of the disease are produced by an effusion of blood or serum, in consequence of a morbid distension, or of a rupture of the vessels of the brain. The pulmonary consumption begins and ends in the same way, allowing only for the difference of situation and structure of the brain and lungs. After the production of predisposing debility from the action of the remote causes formerly enumerated, the fluids are determined to the weakest part of the body. Hence effusions of serum or blood take place in the lungs. When serum is effused, a pituitous or purulent expectoration alone takes place; —when blood is discharged, a disease is produced which

which has been called Hæmoptysis. An effusion of blood in the brain, brought on by the operation of general debility, has been called by Dr. Hoffman, with equal propriety, a hæmorrhage of the brain. The effusion of blood in the lungs in consequence of the rupture of a blood vessel is less fatal than the same accident when it occurs in the brain, only because the blood in the former case is more easily discharged from the system. Where no rupture of a blood-vessel is produced, death is nearly as speedy and certain in the one case as in the other. * Dissections shew many cases of suffocation and death, from the lungs being preternaturally filled with blood or serum. From this great analogy between the remote and proximate causes of the two diseases which have been described, I have taken the liberty to call them both by the name of apoplexy. The only symptom which does not accord with the derivation of the term, is, that in the apoplexy of the lungs, the patient does not fall down as if by an external stroke, which is most frequently the case in the apoplexy of the brain.

* I have seen two cases of sudden death from Hæmoptysis. In one of them there was very little blood discharged through the mouth.

The history of the remote and proximate causes of pneumony will furnish us with a still more remarkable analogy of the connection between a *local* affection, and a *general* disease of the system. The pneumony is produced by remote exciting causes, which act on the whole system. The whole arterial system is frequently agitated by a fever in this disorder before a pain is perceived in the breast or sides, and this fever generally constitutes the strength and danger of the disease. The expectoration which terminates the disorder in health, is always the effect of effusions produced by a general disease, and even the vomicas, which sometimes succeed a deficiency of bleeding in this disorder, always depend upon the same general cause. From this view of the analogy between pneumony and pulmonary consumption, it would seem that the two diseases differed from each other only by the shorter or longer operation of the causes which induce them, and by the greater or less violence and duration of their symptoms. The pneumony appears to be an *acute* consumption, and the consumption a *chronic* pneumony. From the analogy of the pulmonary consumption with the diminutive term of certain fevers, I have taken the liberty of calling it a PNEUMONICULA.

5. I infer that the pulmonary consumption is a disease of the whole system, from its existence without ulcers in the lungs. Of this there are many cases recorded in books of medicine.

Dr. Leigh informs us in his natural history of Lancashire, that the consumption was a very common disease on the sea coast of that country ; but that it was not accompanied either by previous inflammation or ulcers in the lungs. It was generally attended, he says, by an unusual peevishness of temper.

6. And lastly, I infer, that the pulmonary consumption is a disease of the whole system, from its being relieved, or cured, only by remedies which act upon the whole system. This will appear, I hope, hereafter, when we come to treat of the cure of this disorder.

Let us now enquire how far the principles I have laid down will apply to the supposed proximate causes of consumption. These causes have been said to be—an abscess in the lungs, hæmoptysis, tubercles, catarrh, hereditary diathesis, contagion, and the matter of cutaneous eruptions or sores repelled, and thrown upon the lungs. I shall make a few observations upon each of them.

1. An abscess in the lungs is generally the consequence of a neglected, or half cured pneumonia. It is seldom fatal, where it is not connected with a predisposition to consumption from general debility, or where general debility is not previously induced by the want of appetite, sleep, and exercise, which sometimes accompanies that disorder of the lungs. This explanation of the production of consumption by an abscess in the lungs, will receive further support from attending to the effects of wounds in the lungs. How seldom are they followed by pulmonary consumption; and this only because they are as seldom accompanied by predisposing general debility. I do not recollect a single instance of this disorder having followed a wound in the lungs, either by the bayonet, or a bullet, during the late war. The recoveries which have succeeded such wounds, and frequently under the most unfavourable circumstances, shew how very improbable it is that a much slighter affection of the lungs should become the cause of a pulmonary consumption.

A British officer, whom I met in the British camp, a few days after the battle of Brandywine, in September, 1777, informed me that the surgeon-general of the royal army had assured him, that out of twenty-four soldiers who had been admitted

into the hospitals, during the campaign of 1776, with wounds in their lungs, twenty-three of them had recovered. Even primary diseases of the lungs often exist with peculiar violence, or continue for many years without inducing a consumption. I have never known but one instance of the whooping-cough ending in consumption, and all our books of medicine contain records of the asthma continuing for twenty and thirty years without terminating in that disorder. The reason in both cases, must be ascribed to those two original disorders of the lungs not being accompanied by general debility. One fact more will serve to throw still further light upon the subject. Millers are much afflicted with a cough from floating particles of flour constantly irritating their lungs, and yet they are not more subject to consumptions than other labouring people. Hence “a miller’s ‘cough,’” is proverbial in some places, to denote a cough of long continuance without danger.

2. The hæmoptysis is either a local disease, or it is the effect of general debility of the whole system. When it is local, or when it is the effect of causes which induce a *temporary* or *acute* debility only in the system, it is seldom followed by consumption. The accidental discharge of blood from the lungs, from injuries, and from an obstruction

of the menses in women, is of this kind. Many persons are affected by this species of hæmorrhage once or twice in their lives, without suffering any inconvenience from it afterwards. I have met with several cases in which it has occurred for many years every time the body was exposed to any of the causes which induce *sudden*, *direct*, or *indirect* debility, and yet no consumption has followed it. The late king of Prussia informed Dr. Zimmerman that he had been frequently attacked by it during his seven years war, and yet he lived, notwithstanding, above twenty years afterwards without any pulmonary complaints. It is only in persons who labour under *chronic* debility, that an hæmoptysis is necessarily followed by consumption.

3. I yield to the popular mode of expression when I speak of a consumption being produced by tubercles. But I maintain that they are the *effects* of general debility communicated to the bronchial vessels which cause them to effuse a preternatural quantity of mucus. This mucus is sometimes poured into the trachea from whence it is discharged by hawking, more especially in the morning; for it is effused more copiously during the languid hours of sleep than in the day time. But this mucus is frequently effused into the substance of

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the lungs, where it produces those tumours we call tubercles. When this occurs, there is either no cough * or a very dry one. That tubercles are formed in this way, I infer from the dissections and experiments of Dr. Stark, † who tells us, that he found them to consist of inorganic matter—that he was unable to discover any connection between them and the pulmonary vessels, by means of the microscope or injections, and that they first opened into the trachea through the bronchial vessels. It is remarkable that the colour and consistence of the matter of which they are composed, is nearly the same as the matter which is discharged from the trachea, in the moist cough which occurs from a relaxation of the bronchial vessels.

I am aware that these tumours in the lungs have been ascribed to scrophula. But the frequent occurrence of consumptions in persons in whom no scrophulous taint existed, is sufficient to refute this opinion. I have frequently directed my inquiries after this disorder in consumptive patients, and

* See Med. Com. Vol. II.

† Clinical and Anatomical Observations, p. 26, 27. See also Morgagni, letter xxii. 21.

have met with very few cases which were produced by it. It is probable that it may frequently be a predisposing cause of consumption in Great Britain, but I am sure it is not in the United States of America.

4. The catarrh is of two kinds, acute and chronic, both of which are connected with general debility, but this debility is most obvious in the chronic catarrh: hence we find it increased by every thing which acts upon the whole system, such as cold and damp weather, fatigue, and above all, by old age, and relieved or cured by exercise, and every thing else which invigorates the whole system. This species of catarrh often continues for twenty or thirty years without inducing pulmonary consumption, in persons who pursue active occupations.

5. In the hereditary consumption there is either an hereditary debility of the whole system, or an hereditary mal-conformation of the breast. In the latter case, the consumption is the effect of weakness communicated to the whole system, by the long continuance of difficult respiration, or of such injuries being done to the lungs as are incompatible with health and life. It is remarkable, that

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the consumptive diathesis is more frequently derived from paternal than maternal ancestors.

6. Physicians the most distinguished for accurate observations have agreed, that the pulmonary consumption may be communicated by contagion. However doubtful it may be in temperate, it cannot be controverted in warm climates. Morgagni informs us that, Valsalva (who was predisposed to the consumption) was so satisfied of its contagious nature, that he constantly avoided being present at the dissection of the lungs of persons who had died of that disorder. I know that its progress in whole families has been ascribed to a sameness of original constitution, or mal-conformation of the breast in the members of the same family, or the fatigue which is incurred by attending, and the grief which follows the loss of relations who perish by that disorder. Perhaps many of the cases of consumption, which have been ascribed to contagion, may be accounted for by calling in the debilitating operation of one or both of those causes; but there are cases of the disease being communicated by contagion, which cannot be resolved into the influence of either fatigue or grief.

The late Dr. Beardsey, of Connecticut, informed me that he had known several black slaves,

affected by a consumption which had previously swept away several of the white members of the family to which they belonged. In these slaves no suspicion was entertained of the most distant relationship to the persons from whom they had contracted the disorder ; nor had fatigue or grief, from the causes beforementioned, been supposed to have had the least share in debilitating their bodies. Admitting then contagion to act as a remote cause of consumption, it does not militate against the theory which I have aimed to establish ; for if the contagion follow the analogy of all the other contagions that we are acquainted with, it must act by debilitating the whole system. The approach of the jail fever and the plague is often indicated by general languor. The influenza and the measles are always accompanied by general debility, but the small-pox furnishes an analogy to the case in question more directly in point. The contagion of this disorder, whether received by the medium of the air or the skin, never fails of producing a disease of the whole system, before it discovers itself in affections of those parts of the body on which the contagion produced its first operation.—I am disposed to believe, from several cases which have come under my notice, that the contagion which produces the consumption seldom acts in less than two or three months after it is received into the system. I once

attended

attended a lady, in whom the contagion did not discover itself in the lungs for nearly a year after she had been exposed to it, by attending a sister who had died of the consumption. In this case the effects of fatigue, and of grief were entirely worn away from the system by time, as well as by cheerful society.

7. I grant that cutaneous humours, and the matter of old sores, when repelled, or suddenly healed, have in some cases fallen upon the lungs, and produced consumption. But I believe, in every case where this has happened, the consumption was preceded by general debility, or that it was not induced, until the whole system had been previously debilitated by a tedious and distressing cough.

If the reasonings founded upon the facts which have been mentioned be just, then it follows,

III. That the cough, tubercles, ulcers, and purulent or bloody discharges which occur in the pulmonary consumption, are the *effects* and not the *causes* of the disease ; and, that all attempts to cure it, by inquiring after tubercles and ulcers, or into the quality of the discharges from the lungs, are as fruitless as an attempt would be to discover the

causes or cure of dropsies, by an examination of the qualities of collections of water, or to find out the causes and cure of fevers by the quantity or quality of the discharges which take place in those diseases from the kidneys and skin. I admit that the cough, ulcers, and tubercles, after they are formed, increase the danger of the disease, by becoming new causes of stimulus to the system, but in this they are upon a footing with those effusions in the viscera, which take place in the intermitting fever, which though they constitute no part of its cause, frequently produce symptoms and a termination which are wholly unconnected with the original disease.

The tendency of general debility to produce a disease of the lungs appears in many cases, as well as in the pulmonary consumption. Dr. Lind tells us, that the last stage of the jail fever was often marked by a cough. I have seldom been disappointed in looking for a cough and a copious excretion of mucus and phlegm after the 14th or 15th days of the nervous fever. Two cases of hypocondriasis under my care, ended in fatal disorders of the lungs. The debility of old age is generally accompanied by a troublesome cough, and the debility which precedes death, generally discovers its last symptoms in the lungs,—hence, most people die with what

what are called the *Rattles*. They are produced by a sudden and copious effusion of mucus in the bronchial vessels of the lungs.

Should it be asked, why does general debility terminate by a disorder in the lungs, rather than in any other part of the body?—I answer,—that it seems to be a law of the system, that general debility should always produce some local disease. This local disease sometimes manifests itself in dyspepsia, as in the general debility which follows grief;—sometimes it discovers itself in a diarrhoea as in the general debility which succeeds to fear.—Again it appears in the brain, —as in the general debility which succeeds intemperance, and the constant or violent exercise of the understanding, or of stimulating passions; but it more frequently appears in the lungs, as the consequence of general debility. It would seem as if the debility in the cases of consumption is seated chiefly in the blood vessels, while that debility which terminates in diseases of the stomach and bowels, is confined chiefly to the nerves—and that the local affections of the brain arise from a debility, invading alike the nervous and arterial systems. What makes it more probable, that the arterial system is *materially* affected in the consumption is, that the disorder most frequently occurs

curs in those periods of life, and in those habits in which a peculiar state of irritability or excitability is supposed to be present in the arterial system; also in those climates in which there are the most frequent vicissitudes in the temperature of the weather. It is remarkable, that the debility in the inhabitants of the West Indies, whether produced by the heat of the climate, or the excessive pursuits of business or pleasure, generally terminates in dropsy, or in some disorder of the alimentary canal.

I have said, that it seemed to be a law of the system, that general debility should always produce some local affection. But to this law there are sometimes exceptions: The Atrophy appears to be a consumption without an affection of the lungs.—This disorder is frequently mentioned by the writers of the 16th and 17th centuries by the name of Tabes. I have seen several instances of it in adults, but more in children, and a greater number in the children of black than of white parents. The hectic fever, and even the night sweats, were as obvious in several of these cases, as in those consumptions where general debility had discovered itself in an affection of the lungs.

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I come now to make a few observations upon the CURE of consumption; and here I hope it will appear, that the theory which I have delivered admits of an early and very important application to practice.

If the consumption be preceded by general debility, it becomes us to attempt the cure of it before it produce the active symptoms of cough, bloody or purulent discharges from the lungs, and inflammatory or hectic fever. The symptoms which mark its first stage, are too seldom observed; or if observed, they are too often treated with equal neglect by patients and physicians. I shall briefly enumerate these symptoms. They are a slight fever increased by the least exercise,—a burning and dryness in the palms of the hands, more especially towards evening,—rheumy eyes upon waking from sleep,—an increase of urine,—a dryness of the skin, more especially of the feet in the morning,*—an occasional flushing in one, and sometimes in both cheeks,—a hoarse-

* The three last mentioned symptoms are taken notice of by Dr. Bennet, in his Treatise upon the Nature and Cure of the Consumption as *precursors* of the disorder. Dr. Boerhaave used to tell his pupils that they had never deceived him.

ness†—a slight or acute pain in the breast,—a fixed pain in one side, or shooting pains in both sides,—head-ach,—occasional sick and fainty fits,—a deficiency of appetite, and a general indisposition to exercise or motion of every kind.

It would be easy for me to mention cases in which every symptom that has been enumerated has occurred within my own observations. I wish them to be committed to memory by young practitioners; and if they derive the same advantages from attending to them, which I have done, I am sure they will not regret the trouble they have taken for that purpose. It is probable, while a morbid state of the lungs is supposed to be the proximate cause of this disorder, they will not derive much reputation or emolument from curing it in its forming stage; but let them remember, that in all attempts to discover the causes and cures of diseases, which have been deemed incurable, a physician will do nothing effectual until he acquire a perfect indifference to his own interest and fame.

† I have seen the *hoarseness* in one case the first symptom of approaching consumption. In this symptom it preserves the analogy of pneumonia, which often comes on with a hoarseness, and sometimes with paraphonia.

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The remedies for consumption in this stage of the disorder are simple and certain. They consist, in a desertion of all the remote, and exciting causes of the disorder, particularly sedentary employments, damp or cold situations, and whatever tends to weaken the system. When the disease has not yielded to this desertion of its remote and exciting causes, I have recommended the *cold bath*, *Acet*, and *bark* with great advantage. However improper or even dangerous these remedies may be after the disease assumes an inflammatory or hectic type, and produces an affection of the lungs, they are perfectly safe and extremely useful in the state of the system which has been described. The use of the bark will readily be admitted by all those practitioners who believe the pulmonary consumption to depend upon a scrophulous diathesis. Should even the lungs be affected by scrophulous tumors, it is no objection to the use of the bark; for there is no reason why it should not be as useful in scrophulous tumors of the lungs, as of the glands of the throat, provided it be given before those tumors have produced inflammation; and in this case, no prudent practitioner will ever prescribe it in scrophula when seated even in the external parts of the body. To these remedies should be added a diet moderately stimulating, and gentle

gentle exercise. I shall hereafter mention the different species of exercise, and the manner in which each of them should be used so as to derive the utmost advantage from them. I can say nothing of the use of salt-water, or sea-air in this stage of the consumption from my own experience. I have heard them commended by a physician of Rhode-Island; and if they be used before the disease has discovered itself in pulmonary affections, I can easily conceive they may do service.

If the simple remedies which have been mentioned have been neglected, in the first stage of the disorder, it generally terminates in different periods of time, in pulmonary affections; which shew themselves under one of the three following forms.—

1. A fever, accompanied by a cough, a hard pulse, and a discharge of blood, or mucous matter from the lungs.

2. A fever of the hectic kind, accompanied by chilly fits, and night sweats, and a pulse full, quick, and occasionally hard. The discharges from the lungs in this state of the disorder, are frequently purulent.

3. A fever with a weak quick pulse, a troublesome cough, and copious purulent discharges from the lungs, a hoarse and weak voice, and chilly fits and night sweats, alternating occasionally with a diarrhœa.

These three different forms of the pulmonary affection have been distinguished by the names of the first, second, and third stages of the consumption ; but as they do not always succeed each other in the order in which they have been mentioned, I shall consider them as different states of the system.

The first I shall call the INFLAMMATORY—the second the HECTIC, and the third the TYPHUS state. I have seen the pulmonary consumption come on sometimes with all the symptoms of the second, and sometimes with the most of the symptoms of the third state ; and I have seen two cases in which a hard pulse, and other symptoms of inflammatory action appeared in the last hours of life. It is agreeable to pursue the analogy of this disorder with a pneumonia, or an acute inflammation of the lungs. They both make their first appearance in the same seasons of the year. It is true, the pneumonia most frequently attacks with inflammatory symptoms ; but it sometimes occurs with symptoms which for-

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bid blood-letting, and I have more than once seen it attended by symptoms which required the use of wine and bark. The pneumony is attended at first by a dry cough, and an expectoration of streaks of blood—the cough in the consumption, in like manner, is at first dry, and attended by a discharge of blood from the lungs, which is more copious than in the pneumony, only because the lungs are more relaxed in the former than in the latter disorder. There are cases of pneumony in which no cough attends. I have seen cases of pulmonary consumption, in which nothing but a difficulty of breathing discovered a morbid state of the lungs, and one in which there was an entire absence of cough.*

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* In the year 1785, I attended a young lady who had complained of a pain in her right side, and had frequent chills with a fever of the hectic kind. They all gave way to frequent and gentle bleedings. In the summer of 1786, she was seized with the same complaints, and as she had great objections to bleeding, she consulted a physician who gratified her, by attempting to cure her by recommending exercise and country air. In the autumn she returned to the city much worse than when she left it. I was again sent for, and found her confined to her bed with a pain in her right side, but without the least cough or fever. Her pulse was preternaturally slow. She could lie only on her left side. She sometimes complained of acute flying pains in her head, bowels,

The pneumonia terminates in different periods according to the degrees of inflammation, or the nature of the effusions which take place in the lungs—the same observation applies to the pulmonary consumption. The symptoms of the different species of pneumonia frequently run into each other; so do the symptoms of the three species of consumption which have been mentioned. In short, the pneumonia and consumption are alike in so

bowels, and limbs. About a month before her death, which was on the 3d of May 1787, her pulse became quick, and she had a little hacking cough, but without any discharge from her lungs. Upon my first visit to her in the preceding autumn, I had told her friends that I believed she had an abscess in her lungs. The want of fever and cough afterwards however gave me reason to suspect that I had been mistaken. The morning after her death, I received a message from her father, informing me that it had been among the last requests of his daughter, that the cause of her death should be ascertained by my opening her body. I complied with this request, and in company with Dr. Hall, examined her thorax. We found the left lobe of the lungs perfectly sound; the right lobe adhered to the pleura, in separating of which, Dr. Hall plunged his hand into a large sac which contained about half a pint of purulent matter, and which had nearly destroyed the whole substance of the right lobe of the lungs.

I have met with only two other cases of consumption in which there was an absence of a *quick* pulse. In both of them the pulse was regular to the last day of life.

many particulars, that they appear to resemble shadows of the same substance. They differ only as the protracted shadow of the evening does from that of the noon-day sun.

I know that it will be objected here that the consumption is sometimes produced by scrophula, and that this creates an essential difference between it and pneumonia. I formerly admitted scrophula to be one of the *remote* causes of the consumption; but this does not invalidate the parallel which has been given of the two diseases. The phenomena produced in the lungs are the same as to their nature, whether they be produced by the remote cause of scrophula, or by the sudden action of cold and heat upon them.

No more happens in the cases of acute and chronic pneumonia, than what happens in dysentery and rheumatism. These two last diseases are for the most part so acute, as to confine the patient to his bed or his room, yet we often meet with both of them in patients who go about their ordinary business, and, in some instances, carry their diseases with them for two or three years.

The parallel which has been drawn between the pneumonia and consumption, will enable us to understand

derstand the reason why the latter disorder terminates in such different periods of time. The less it partakes of pneumonia, the longer it continues, and vice versa. What is commonly called in this country a *galloping consumption*, is a disease compounded of different degrees of consumption and pneumonia. It terminates frequently in two or three months, and without many of the symptoms which usually attend the last stage of pulmonary consumption. But there are cases in which patients in a consumption are suddenly snatched away by an attack of pneumonia. I have met with one case only, in which, contrary to my expectation, the patient mended after an attack of an acute inflammation of the lungs, so as to live two years afterwards.

It would seem from these facts, as if nature had preferred a certain gradation in diseases, as well as in other parts of her works. There is scarcely a disease in which there is not a certain number of grades, which mark the distance between health and the lowest specific deviation from it. Each of these grades has received different names, and has been considered as a distinct disease, but more accurate surveys of the animal economy have taught us, that they frequently depend upon the

H 2 same

same original causes, and that they are only greater or less degrees of the same disease.

I shall now proceed to say a few words upon the cure of the different states of pulmonary consumption. The remedies for this purpose are of two kinds, viz. PALLIATIVE and RADICAL. I shall first mention the palliative remedies which belong to each state, and then mention those which are alike proper in them all. The palliative remedies for the

I. Or INFLAMMATORY STATE, are

1. BLOOD-LETTING. It may seem strange to recommend this debilitating remedy in a disease brought on by debility. Were it proper in this place, I could prove that there is no disease in which bleeding is prescribed, which is not induced by predisposing debility in common with the pulmonary consumption. I shall only remark here, that in consequence of the exciting cause acting upon the system (rendered extremely excitable by debility) such a morbid and excessive excitement is produced in the arteries as to render a diminution of the stimulus of the blood absolutely necessary to reduce it. I have used this remedy with great

great success in every case of consumption, attended by a hard pulse, or a pulse rendered weak by a laborious transmission of the blood through the lungs. In the months of February and March in the year 1781, I bled a Methodist minister, who was affected by this state of consumption, fifteen times in the course of six weeks. The quantity of blood drawn at each bleeding was never less than eight ounces, and it was at all times covered with an inflammatory crust. By the addition of country air, and moderate exercise, to this copious evacuation, in the ensuing spring he recovered his health so perfectly, as to discharge all the duties of his profession for many years, nor was he ever afflicted afterwards with a disorder in his breast. I have in another instance, bled a citizen of Philadelphia eight times in two weeks, in this state of consumption, and with the happiest effects. The blood drawn at each bleeding was always fizzy, and never less in quantity than ten ounces. To these cases I might add many others of consumptive persons who have been perfectly cured by frequent, and of many others whose lives have been prolonged by occasional bleedings.— But I am sorry to add, that I could relate many more cases of consumptive patients, who have died martyrs to their prejudices against the use of this invaluable remedy. A common objection to it is,

H 3 that

that it has been used without success in this disorder. When this has been the case, I suspect that it has been used in one of the other two states of pulmonary consumption which have been mentioned, for it has unfortunately been too fashionable among physicians to prescribe the same remedies in every stage and species of the same disorder; and this I take to be the reason why the same medicines, which in the hands of some physicians, are either inert, or instruments of mischief, are, in the hands of others, used with more or less success in every case in which they are prescribed. Another objection to bleeding in the inflammatory state of consumption, is derived from the apparent and even sensible weakness of the patient. The men who urge this objection, do not hesitate to take from sixty to an hundred ounces of blood from a patient in a pneumonia in the course of five or six days, without considering that the debility in the latter case is such as to confine a patient to his bed, while in the former case, the patient's strength is such as to enable him to walk about his house, and even to attend to his ordinary business. The difference between the debility in the two diseases, consists in its being *acute* in the one, and *chronic* in the other. It is true, the preternatural or convulsive excitement of the arteries is somewhat greater in the pneumonia,

mony, than in the inflammatory consumption ; but the plethora on which the necessity of bleeding is partly founded, is certainly greater in the inflammatory consumption than in pneumonia.— This is evident from women, and even nurses, discharging from four to six ounces of menstrual blood every month, while they are labouring with the most inflammatory symptoms of the disorder ; nor is it to be wondered at, since the appetite is frequently unimpaired, and the generation of blood continues to be the same, as in perfect health.

Dr. Cullen recommends the use of bleeding in consumptions in order to lessen the inflammation of the ulcers in the lungs, and thereby to dispose them to heal. From the testimonies of the relief which bleeding affords in external ulcers and tumours accompanied by inflammation, I am disposed to expect the same benefit from it in inflamed ulcers and tumours in the lungs : Whether, therefore, we adopt Dr. Cullen's theory of consumption, and treat it as a local disease, or assent to the one which I have delivered, still repeated bleedings appear to be equally necessary and useful.

I have seen two cases of inflammatory consumption, attended by a hæmorrhage of a quart

of blood from the lungs. I agreed at first with the friends of these patients in expecting a rapid termination of their disorder in death, but to the joy and surprise of all connected with them, they both recovered. I ascribed their recovery wholly to the inflammatory action of their systems being suddenly reduced by a spontaneous discharge of blood. These facts, I hope, will serve to establish the usefulness of blood-letting in the inflammatory state of consumption, with those physicians who are yet disposed to trust more to the fortuitous operations of nature, than to the decisions of reason and experience.

I have always found this remedy to be more necessary in the winter and first spring months, than at any other season. We obtain by means of repeated bleedings, such a mitigation of all the symptoms as enables the patient to use exercise with advantage as soon as the weather becomes so dry and settled, as to admit of his going abroad every day.

The relief obtained by bleeding, is so certain in this state of consumption, that I often use it as a palliative remedy, where I do not expect it will perform a cure. I was lately made happy in finding, that I am not singular in this practice. Dr.

Hamilton,

Hamilton, of Lynn Regis, used it with success in a consumption, which was the effect of a most deplorable scrophula, without entertaining the least hope of its performing a cure.* In those cases where inflammatory action attends the last scene of the disorder, there is often more relief obtained by a little bleeding than by the use of opiates, and it is always a more humane prescription, in desperate cases, than the usual remedies of vomits and blisters.

I once bled a sea captain, whom I had declared to be within a few hours of his dissolution, in order to relieve him of uncommon pain, and difficulty in breathing. His pulse was at the same time hard. The evacuation, though it consisted of only four ounces of blood, had the wished for effect, and his death, I have reason to believe, was rendered more easy by it. The blood, in this case, was covered with a buffy coat.

The quantity of blood drawn in every case of inflammatory consumption, should be determined by the force of the pulse, and the habits of the patient. I have seldom taken more than eight, but more frequently only six ounces at a time. It is

* *Observations on Scrophulous Affections.*

much

much better to repeat the bleeding once or twice a week, than to use it less frequently, but in larger quantities.

From many years experience of the efficacy of bleeding in this state of consumption, I feel myself authorised to assert, that where a greater proportion of persons die of consumption when it makes its first appearance in the lungs, with symptoms of inflammatory diathesis, than die of ordinary pneumonies, (provided exercise be used afterwards) it must in nine cases out of ten, be ascribed to the ignorance, or erroneous theories of physicians, or to the obstinacy or timidity of patients.

In speaking thus confidently of the necessity and benefits of bleeding in the inflammatory state of consumption, I confine myself to observations made chiefly in the state of Pennsylvania. It is possible the inhabitants of European countries and cities, may so far have passed the simple ages of inflammatory disorders, as never to exhibit those symptoms on which I have founded the indication of blood-letting. I am disposed to believe moreover that in most of the southern states of America, the inflammatory action of the arterial system is of too transient a nature to admit of the repeated bleedings in the consumption which are used with

so much advantage in the middle and northern states.

In reviewing the prejudices against this excellent remedy in consumptions, I have frequently wished to discover such a substitute for it as would with equal safety and certainty take down the morbid excitement, and action of the arterial system. I believe in the existence of such a remedy; but until it be discovered, it becomes us to combat the prejudices against bleeding; and to derive all the advantages from it which have been mentioned.

2. A second remedy for the inflammatory state of consumption should be sought for in a MILK and VEGETABLE DIET. In those cases where the milk does not lie easy on the stomach, it should be mixed with water, or it should be taken without its cheesy or oily parts, as in whey, or buttermilk, or it should be taken without skimming; for there are cases in which milk will agree with the stomach in this state, and in no other. The oil of the milk probably helps to promote the solution of its curds in the stomach. It is seldom in the power of physicians to prescribe asses' or goats' milk in this disorder; but a good substitute may be prepared for them by adding to cows' milk

milk a little sugar, and a third or fourth part of water, or of a weak infusion of green tea. The vegetables which are eaten in this state of the disorder, should contain as little stimulus as possible. It would seem as if the moderate portion of saccharine matter which is contained in certain fruits, such as strawberries, grapes, and sweet apples, were peculiarly agreeable and useful, for each of these fruits has been said to have cured the consumption. In those cases where the stomach is disposed to dyspepsia, a little animal food, also soft boiled eggs, may be taken with safety, mixed with vegetable aliment. Where there is no morbid affection of the stomach, I have seen the white meats eaten without increasing the inflammatory symptoms of the disease. The transition from a full diet to milk and vegetables should be gradual, and the addition of animal to vegetable aliment, should be made with the same caution. From the neglect of this direction, much error, both in theory and practice, has arisen in the treatment of consumptions.

In every case it will be better for the patient to eat four or five, rather than only two or three meals in a day. A less stimulus is by this means communicated to the system, and less chyle is mixed with the blood in a given time. Of so much importance

importance do I conceive this direction to be, that I seldom prescribe for a chronic disease of any kind without enforcing it.

3. Vomits have been much commended by Dr. Read in this disorder. From their indiscriminate use in every state of consumption, I am satisfied they have oftener done harm than good. In cases where a patient objects to bleeding, or where a physician doubts of its propriety, vomits may always be substituted in its room with great advantage.

4. Nitre in moderate doses of ten or fifteen grains taken three or four times a day, has sometimes done service in this disorder; but I believe it has been only when the disease has appeared with inflammatory symptoms. Care should be taken not to persevere too long in the use of this remedy as it is apt to impair the appetite. I have known one case in which it produced an obstinate dyspepsia, and a disposition to the colic; but it removed at the same time, the symptoms of pulmonary consumption.

5. Cold and dry air, when combined with the exercise of *walking*, deserves to be mentioned as an antiphlogistic remedy. I have repeatedly prescribed

prescribed it in this species of the consumption with advantage, and have often had the pleasure of finding a single walk of two or three miles in a clear cold day, produce nearly the same diminution of the force and frequency of the pulse, as the loss of six or eight ounces of blood.

I come now to treat of the palliative remedies which are proper in the

II. Or HECTIC STATE of Consumption. Here we begin to behold the disorder in a new and more distressing form than in the state which has been described. There is in this state of consumption the same complication of inflammatory and typhus diathesis which occurs in the typhoid and puerperile fevers, and of course the same difficulty in treating it successfully ; for the same remedies do good and harm, according as the former or latter diathesis prevails in the system.

All that I shall say upon this state is, that the treatment of it should be accommodated to the predominance of inflammatory or typhus symptoms, for the hectic state presents each of them alternately every week, and sometimes every day to the hand or eye of a physician. When a hard pulse with acute pains in the side and breast occur,
bleeding

bleeding and other remedies for the inflammatory state must be used; but when the disease exhibits a predominance of typhus symptoms, the remedies for that state to be mentioned immediately, should be prescribed in moderate doses. There are several palliative medicines which have been found useful in the hectic state, but they are such as belong alike to the other two states; and therefore will be mentioned hereafter in a place assigned to them.

I am sorry, however, to add, that where bleeding has not been indicated, I have seldom been able to afford much relief by medicine in this state of consumption. I have used alternately the most gentle, and the most powerful vegetable and metallic tonics to no purpose. Even arsenic has failed in my hands of affording the least alleviation of the hectic fever. I conceive the removal of this fever, to be the great desideratum in the cure of consumption, and should it be found after all our researches to exist only in exercise, it will be no departure from a law of nature; for I believe there are no diseases produced by equal degrees of chronic debility, in which medicines are of any more efficacy, than they are in the hectic fever of the pulmonary consumption.

I pro-

I proceed now to speak of the palliative remedies which are proper in the

III. Or, TYPHUS STATE of the Pulmonary Consumption.

The first of these are STIMULATING MEDICINES. However just the complaints of Dr. Fothergill may be against the use of balsams in the inflammatory and mixed states of consumption, I am satisfied that they are not only safe, but useful likewise in mitigating the symptoms of weak morbid action in the arterial system. I have therefore frequently prescribed the balsam of copaivæ, of Peru, the oil of amber, and different preparations of turpentine and tar in moderate doses with obvious advantage. Garlic, Elixir of vitriol, the juice of dandelion, a strong tea made of horehound, and a decoction of the inner bark of the wild cherry tree;* also bitters of all kinds, have all been found safe and useful tonics in this species of the consumption. Even the Peruvian bark and the cold bath, so often and so generally condemned in consumptions, are always innocent and frequently active remedies where there is a total absence of inflammatory diathesis in this disorder. With these medicines should be combined

* *Prunus Virginiana.*

2. A CORDIAL and STIMULATING DIET. Milk and vegetables so proper in the inflammatory, are improper when taken alone in this state of consumption. I believe they often accelerate that decay of appetite and diarrhœa, which form the closing scene of the disorder. I think I have seen advantages from the use, not only of fresh, but of salted animal food when prescribed in the total absence of inflammatory diathesis. Oysters, it has been said, have performed cures of consumption. If they have, it must have been only when they were eaten in that state of it which is now under consideration. They are a most savoury and wholesome article of diet in all diseases attended with symptoms of general debility. I have found the same advantage from dividing the meals here that I mentioned under a former head. The exhibition of food in this case, should not be left to the calls of appetite, any more than the exhibition of a medicine. Indeed food may be made to supply the place of cordial medicines, by keeping up a constant and gentle action in the whole system. For this reason, I have frequently advised my patients never to suffer their stomachs to be empty, even for a single hour. I have sometimes aimed to keep up the influence of a gentle action in the stomach upon the whole system, by advising them to eat in the night, in order to obviate the increase of the

excretion in the lungs and of the cough in the morning, which are brought on in part by the increase of debility from the long abstraction of the stimulus of aliment during the night.

However safe and even useful the cordial medicines and diet which have been mentioned may appear, yet I am sorry to add, that I have never seen any other advantages from them than a mitigation of distressing symptoms, except when they have been combined with suitable and long continued exercise. Even under this favourable circumstance, they are often ineffectual; for there frequently occurs in this state of consumption, such a destruction of the substance and functions of the lungs, as to preclude the possibility of a recovery by the use of any of the remedies which have been discovered.

I have said formerly that the three states of consumption do not observe any regular course in succeeding each other. They are not only complicated in some instances, but they often appear and disappear half a dozen times in the course of the disease, according to the influence of the weather, dress, diet, and the passions, upon the system. The great secret, therefore, of treating this disorder consists in accommodating all the remedies that

have

have been mentioned to the predominance of either of the three different states of the system, as manifested chiefly by the pulse. It is in consequence of having observed the evils which have resulted from the ignorance or neglect of this practice, that I have sometimes wished that it were possible to abolish the seducing nomenclature of diseases altogether, in order thereby to oblige physicians to conform exactly to the fluctuating state of the system in all their prescriptions ; for it is not more certain, that in all cultivated languages, every idea has its appropriate word, than that every state of a disease has its appropriate dose of medicine, the knowledge and application of which, can alone constitute rational, or ensure uniformly, successful practice.

I come now to say a few words upon those palliative remedies which are alike proper in every state of the Pulmonary Consumption.

The first Remedy under this head is a DRY SITUATION. A damp air, whether breathed in a room, or out of doors, is always hurtful in every species of this disorder. A kitchen or a bed room below the level of the ground has often produced, and never fails to increase, a pulmonary consumption. I have often observed a peculiar paleness,

(the first symptom of general debility) to shew itself very early in the faces of persons who work or sleep in cellar kitchens or shops.

2. COUNTRY AIR. The higher and drier the situation which is chosen for the purpose of enjoying the benefit of this remedy, the better. Situations exposed to the sea, should be carefully avoided; for it is a singular fact, that while consumptive persons are benefited by the sea air, when they breathe it on the ocean, they are always injured by that portion of it which they breathe on the sea-shore. I shall not pause to inquire, why a mixture of land and sea air is so hurtful in the consumption, and at the same time so agreeable to persons in health, and so medicinal in many other diseases, but shall dismiss this head by adding a fact which was communicated to me by Dr. Matthew Irvine of South-Carolina, and that is, That those situations which are in the neighbourhood of Bays or Rivers, where the salt and fresh waters mix their streams together, are more unfavourable to consumptive patients than the sea-shore; and therefore should be more carefully avoided by them in exchanging city for country air.

3. LOOSE DRESSES, AND A CAREFUL ACCOMMODATION OF THEM TO THE CHANGES IN THE WEATHER.

WEATHER. Many facts might be mentioned to shew the influence of compression and of tight ligatures of every kind, upon the different parts of the body; also of too much, or too little clothing, in producing, or increasing diseases of every kind, more especially those which affect the lungs. Tight stays, garters, waistbands, and collars, should all be laid aside in the consumption, and the quality of the clothing should be suited to the weather. A citizen of Maryland informed me, that he had twice had a return of a cough and spitting of blood, by wearing his summer clothes a week after the weather became cool in the month of September. But it is not sufficient to vary the weight or quality of dress with the seasons. It should be varied with the changes which take place in the temperature of the air every day, even in the summer months, in middle latitudes. I know a citizen of Philadelphia, who has laboured under a consumptive diathesis near thirty years, who believes that he has lessened the frequency and violence of pulmonic complaints during that time, by a careful accommodation of his dress to the weather. He has been observed frequently to change his waistcoat and small clothes twice or three times in a day, in a summer month.

A repetition of colds, and thereby an increase of the disorder, will be prevented by wearing flannel next to the skin in winter, and muslin in the summer, either in the form of a shirt or a waist-coat: where these are objected to, a piece of flannel, or of soft sheepskin, should be worn next to the breast. They not only prevent colds, but frequently remove chronic pains from that part of the body.

4. ARTIFICIAL EVACUATIONS by means of BLISTERS and ISSUES. I suspect the usefulness of these remedies to be chiefly confined to the inflammatory and hectic states of consumption. In the typhus state, the system is too weak to sustain the discharges of either of them. Fresh blisters should be preferred to such as are perpetual, and the issues, to be useful should be large. They are supposed to afford relief by diverting a preternatural secretion and excretion of mucus or pus from the lungs, to an artificial emunctory in a less vital part of the body.

5. Certain FUMIGATIONS and VAPORS. An accidental cure of a pulmonary affection by the smoke of rosin, in a man who bottled liquors, raised for a while the credit of the first of those remedies. I have tried them, but without much permanent effect.

effect. I think I have seen the pain in the breast relieved by receiving the vapour from a mixture of equal parts of tar, bran, and boiling water into the lungs. The sulphureous and saline air of Stabiæ, between Mount Vesuvius and the Mediterranean sea, and the effluvia of the pine forests of Lybia, were supposed in ancient times to be powerful remedies in consumptive complaints ; but it is probable, the exercise used in travelling to those countries, contributed chiefly to the cures which were ascribed to foreign matters acting upon the lungs.

6. LOZENGES, SYRUPS, and DEMULCENT TEAS. These are too common and too numerous to be mentioned.

7. OPIATES. It is a mistake in practice, founded upon a partial knowledge of the qualities of opium, to administer it only at night, or to suppose that its effects in composing a cough, depend upon its inducing sleep. It should be given in small doses during the day, as well as in larger ones at night. The dose should be proportioned to the degrees of action in the arterial system. The less this action, the more opium may be taken with safety and advantage.

8. DIFFERENT POSITIONS OF THE BODY have been found to be more or less favourable to the abatement of the cough. These positions should be carefully sought for, and the body kept in that which procures the most freedom from coughing. I have heard of an instance, in which a cough which threatened a return of an hæmorrhage from the lungs, was perfectly composed for two weeks, by keeping the patient nearly in one posture in bed; but I have known more cases in which relief from coughing was to be obtained only by an erect posture of the body.

9. Considerable relief will often be obtained from the patient's SLEEPING BETWEEN BLANKETS in winter, and on a MATTRESS in summer. The former prevent fresh colds from night sweats; the latter frequently checks them altogether. In cases where a sufficient weight of blankets to keep up an agreeable warmth, cannot be borne without restraining easy and full acts of inspiration, the patient should sleep under a light feather bed, or an eider down coverlit. They both afford more warmth than double or treble their weight of blankets.

However comfortable this mode of producing warmth in bed may be, it does not protect the lungs

lungs from the morbid effects of the distant points of temperature of a warm parlour in the day time, and a cold bed-chamber at night. To produce an equable temperature of air at all hours, I have frequently advised my patients, where going to a warm climate was not practicable, to pass their nights as well as days in an open stove room, in which nearly the same degrees of heat were kept up at all hours. I have found this practice, in several cases, a tolerable substitute for a warm climate.

10. The MODERATE use of the lungs, in READING, PUBLIC SPEAKING, LAUGHING, and SINGING. The lungs, when debilitated, derive equal benefit with the limbs, or other parts of the body, from moderate exercise. I have mentioned in another place * several facts which support this opinion. But too much pains cannot be taken to inculcate upon our patients to avoid all *excess* in the use of the lungs, by *long*, or *loud* reading, speaking, or singing, or by sudden and violent *bursts* of laughter. I shall long lament the death of a female patient, who had discovered many hopeful signs of a recovery from a consumption, who re-

* An account of the effects of common salt in the cure of hæmoptysis.

lapsed, and died in consequence of bursting a blood-vessel in her lungs, by a sudden fit of laughter.

II. Are there any advantages to be derived from the excitement of certain **PASSIONS** in the treatment of consumptions? Dr. Blane tells us, that many consumptive persons were relieved, and that some recovered, in consequence of the terror which was excited by a hurricane in Barbadoes, in the year 1780. It will be difficult to imitate, by artificial means, the accidental cures which are recorded by Dr. Blane; but we learn enough from them to inspire the invigorating passions of hope and confidence in the minds of our patients, and to recommend to them such exercises as produce exertions of body and mind analogous to those which are produced by terror. Van Swieten and Smollet relate cures of consumptions, by patients falling into streams of cold water. Perhaps in both instances, the cures were performed only by the fright and consequent exertion produced by the fall. This is only one instance out of many which might be mentioned, of partial and unequal action being suddenly changed into general and equal excitement in every part of the system. The cures of consumptions which have been performed by a camp life, * have probably been much assist-

* *Medical Inquiries and Observations.*

ed by the commotions in the passions which were excited by the various and changing events of war.

Before I proceed to speak of the radical cure of the consumption, it will be necessary to observe, that by means of the palliative remedies which have been mentioned, many persons have been recovered, and some have had their lives prolonged by them for many years. In all these cases I have found, upon inquiry, that the disorder was attended with but little general debility, and that it frequently recurred as soon as the patient left off the use of his remedies, unless it were prevented by necessary or voluntary exercise.

It is truly surprising to observe how long some persons have lived, who have been affected by a consumptive diathesis, and by frequent attacks of many of the most troublesome symptoms of this disorder. Van Swieten mentions the case of a man, who had lived thirty years in this state. Morton relates the history of a man, in whom the symptoms of consumption appeared with but little variation or abatement from his early youth till the 70th year of his age; and Bennet says, he knew an instance of this disorder which continued sixty years. I prescribed for one of my pupils four-
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and-twenty years ago, in a consumption, who, during the greatest part of the time that has elapsed since, has seldom passed a year without spitting blood, nor a week without coughing, who now enjoys a tolerable share of health. In this case, the fatal tendency of the disorder was constantly opposed by rural exercises, by a cordial, but temperate diet, and (during the absence of inflammatory action in his pulse) by the occasional use of Peruvian bark.

I am led here to mention another instance of the analogy between pneumonia and the pulmonary consumption. We often see the same frequency of recurrence of both disorders in habits which are predisposed to them. I have attended a German citizen of Philadelphia, in several fits of the pneumonia, who has been confined to his bed eight-and-twenty times, by the same disorder, in the course of the same number of years. He has, for the most part, enjoyed good health in the intervals of those attacks, and always appeared, till lately, to possess a good constitution. In the cases of the frequent recurrence of pneumonia, no one has suspected the disease to have originated exclusively in a morbid state of the lungs; on the contrary, it appears evidently to be produced by the sudden influence of the same causes, which, by acting

acting with less force, and for a *longer* time, produce the pulmonary consumption. The name of pneumonia is taken from the principal symptom of this disorder, but it is as certainly a disease of the whole arterial system as the consumption; and I add further, that it is as certainly produced by general predisposing debility. The hardness and fulness of the pulse do not militate against this assertion, for they are altogether the effects of a morbid and convulsive excitement of the sanguiferous system. The strength manifested by the pulse is moreover partial, for every other part of the body discovers, at the same time, signs of extreme debility.

It would be easy, by pursuing this subject a little further, to mention a number of facts which, by the aid of principles in physiology and pathology, which are universally admitted, would open to us a new theory of fevers, but this would lead us too far from the subject before us. I shall only remark, that all that has been said of the influence of *general* debilitating causes upon the lungs, both in pneumonia and consumption, and of the alternation of the consumption with other general diseases, will receive great support from considering the lungs only as a part of the whole external surface of the body, upon which most of
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the remote and exciting causes of both diseases produce their first effects. This extent of the surface of the body, not only to the lungs, but to the alimentary canal, was first taken notice of by Dr. Boerhaave; but was unhappily neglected by him in his theories of the diseases of the lungs and bowels. Dr. Keil supposes that the lungs, from the peculiar structure of the bronchial vessels, and air vesicles, expose a surface to the action of the air, equal to the extent of the whole external and visible surface of the body.

Thus have I mentioned the usual palliative remedies for the consumption. Many of these remedies have, under certain circumstances, been said to have cured the disease, but I suspect that such cures have taken place only when the disorder has partaken of an intermediate nature between a pneumonia and a true pulmonary consumption. Such connecting shades appear between the extreme points of many other diseases. In a former essay,* I endeavoured to account for the transmutation (if I may be allowed the expression) of the pneumonia into the consumption, by ascribing

* Inquiry into the diseases and remedies of the Indians of North America; and a comparative view of their diseases and remedies with those of civilized nations. P.

it to the increase of the debilitating refinements of civilized life. This opinion has derived constant support from every observation I have made connected with this subject, since its first publication, in the year 1772.

I come now to treat of the RADICAL REMEDIES for the pulmonary consumption.

In an essay formerly alluded to, * I mentioned the effects of labour, and the hardships of a camp or naval life, upon this disorder. As there must frequently occur such objections to each of those remedies, as to forbid their being recommended or adopted, it will be necessary to seek for substitutes for them in the different species of exercise. These are, *active*, *passive*, and *mixed*. The *active*, includes walking, and the exercise of the hands and feet in working or dancing. The *passive* includes rocking in a cradle, swinging, sailing, and riding in carriages of different kinds. The *mixed* is confined chiefly to riding on horse-back.

I have mentioned all the different species of exercise, not because I think they all belong to the

* Thoughts upon the pulmonary consumption. Med. Inq. and Observations.

class of radical remedies for the consumption, but because it is often necessary to use those which are passive, before we recommend those of a mixed or active nature. That physician does not err more who advises a patient to take physic, without specifying its qualities and doses, than the physician does who advises a patient, in a consumption, to use exercise, without specifying its species and degrees. From the neglect of this direction, we often find consumptive patients injured instead of being relieved by exercises, which, if used with judgment, might have been attended with the happiest effects.

I have before suggested that the stimulus of every medicine, which is intended to excite action in the system, should always be in an exact ratio to its excitability. The same rule should be applied to the stimulus of exercise. I have heard a well attested case of a young lady, upon whose consumption the first salutary impression was made by rocking her in a cradle; and I know another case in which a young lady, in the lowest state of that debility which precedes an affection of the lungs, was prepared for the use of the mixed and active exercises, by being first moved gently backwards and forwards in a chariot without horses, for an hour every day. Swinging appears to act

in the same gentle manner. In the case of a gardener, who was far advanced in a consumption, in the Pennsylvania hospital, I had the pleasure of observing its good effects, in an eminent degree. It so far restored him, as to enable him to complete his recovery by working at his former occupation.

In cases of extreme debility, the following order should be recommended in the use of the different species of exercise.

1. Rocking in a cradle, or riding on an elastic board—commonly called a chamber horse.
2. Swinging.
3. Sailing.
4. Riding in a carriage.
5. Riding on horseback.
6. Walking.
7. Running—Dancing, &c.

In the use of each of those species of exercise great attention should be paid to the *degree or force*

of action with which they are applied to the body. For example,—in riding in a carriage, the exercise will be less in a four-wheel carriage than in a single horse chair, and less when the horses move in a walking, than a trotting gait. In riding on horseback, the exercise will be less or greater according as the horse walks, paces, canters, or trots, in passing over the ground.

I have good reason to believe, that an English sea captain, who was on the verge of the grave with the consumption, in the spring of the year 1790, owed his perfect recovery to nothing but the above gradual manner, in which, by my advice, he made use of the exercises of riding in a carriage and on horseback. I have seen many other cases of the good effects of thus accommodating exercise to debility; and I am sorry to add, that I have seen many cases in which, from the neglect of this manner of using exercise, most of the species and degrees of it, have either been useless, or done harm. However carelessly this observation may be read by physicians, or attended to by patients, I conceive no direction to be more necessary in the cure of consumptions. I have been thus particular in detailing it, not only because I believe it to be important, but that I might atone to society for that portion of evil which I might have prevented by

by a more strict attention to it in the first years of my practice.

The more the arms are used in exercise the better. One of the proprietary governors of Pennsylvania, who laboured for many years under a consumptive diathesis, derived great benefit from frequently rowing himself in a small-boat, a few miles up and down the river Schuylkill. Two young men, who were predisposed to a consumption, were perfectly cured by working steadily at a printing press in this city. Perhaps the superior advantages of riding on horseback, in this disorder, may arise in part from the constant and gentle use of the arms in the management of the bridle and the whip.

Much has been said in favour of sea voyages in consumptions. In the mild degrees of the disorder they certainly have done service,—but I suspect the relief given, or the cures performed by them, should be confined chiefly to seafaring people, who add to the benefits of a constant change of pure air, a share of the invigorating exercises of navigating the ship. I have frequently heard of consumptive patients reviving at sea, probably from the transient effects of sea sickness upon the whole system, and growing worse as soon as they

K 2 came

came near the end of their voyage. It would seem as if the mixture of land and sea airs was hurtful to the lungs in every situation and condition in which it could be applied to them. Nor is this peculiar and morbid operation of land and sea airs upon the human body confined only to consumptive people. I crossed the Atlantic ocean in the year 1766, with a sea captain, who announced to his passengers the agreeable news that we were near the British coast before any discovery had been made of our situation by sounding, or by a change in the colour of the water. Upon asking him upon what he founded his opinion,—he said, that he had been sneezing, which he added, was the sign of an approaching cold, and that in the course of upwards of twenty years, he had never made the land (to use the seaman's phrase) without being affected in a similar manner. I have visited many sick people in Philadelphia soon after their arrival from sea, who have informed me, that they had enjoyed good health during the greatest part of their voyage, and that they had contracted their indispositions after they came within sight of the land. I mention these facts only to shew the necessity of advising consumptive patients, who undertake a sea voyage for the recovery of their health, not to expose themselves upon deck in the morning and at night, after they arrive within the re-

gion in which the mixture of the land and sea airs may be supposed to take place.

I subscribe, from what I have observed, to the bold declaration of Dr. Sydenham, in favour of the efficacy of *riding on horseback*, in the cure of consumption. I do not think the existence of ulcers, or even tubercles in the lungs, when recent, or of a moderate size, the least objection to the use of this excellent remedy. Ulcers in the lungs are not necessarily fatal, and tubercles have no malignity in them which should render their removal impracticable by this species of exercise. The first question, therefore, to be asked by a physician who visits a patient in this disorder should be, not what is the state of his lungs, but, is he able to ride on horseback.

There are two methods of riding for health in this disorder. The first is by short excursions; the second is, by long journeys. In slight consumptive affections, and after a recovery from an acute illness, short excursions are sufficient to remove the existing debility; but in the more advanced stages of consumption, they are seldom effectual, and frequently do harm by exciting an occasional appetite without adding to the digestive powers. They moreover keep the system con-

stantly vibrating by their unavoidable inconstancy, between distant points of tone and debility*, and they are unhappily accompanied at all times from the want of a succession of fresh objects to divert the mind, by the melancholy reflection that they are the sad, but necessary conditions of life.

In a consumption of long continuance or of great danger, long journeys on horse back are the most effectual modes of exercise. They afford a constant succession of fresh objects and company, which divert the mind from dwelling upon the danger of the existing malady ; they are moreover attended by a constant change of air, and they are not liable to be interrupted by company, or transient changes in the weather, by which means appetite and digestion, action and power all keep pace with each other. It is to be lamented that the use of this excellent remedy is frequently opposed by indolence and narrow circumstances in both sexes, and by the peculiarity of situation and temper in the female sex. Women are attached to their families by stronger ties than men. They cannot travel alone. Their delicacy, which is in-

* The bad effects of *inconstant* exercise have been taken notice of in the gout. Dr. Sydenham says, when it is used only by fits and starts in this disorder, it does harm.

creased by sickness, is liable to be offended at every stage,—and lastly, they sooner relax in their exertions to prolong their lives than men. Of the truth of the last observation, Sir William Hamilton has furnished us with a striking illustration. He tells us, that in digging into the ruins produced by the late earthquake in Calabria, the women who perished in it, were all found with their arms folded as if they had abandoned themselves immediately to despair and death; whereas, the men were found with their arms extended, as if they had resisted their fate to the last moment of their lives. It would seem from this fact, and many others of a similar nature which might be related; that a capacity of bearing pain and distress with fortitude and resignation, was the distinguishing characteristic of the female mind; while a disposition to resist and overcome evil belonged in a more peculiar manner to the mind of man. I have mentioned this peculiarity of circumstances and temper in female patients, only for the sake of convincing physicians that it will be necessary for them to add all the force of eloquence to their advice, when they recommend journeys to women in preference to all other remedies, for the recovery of their health.

Persons, moreover, who pursue active employments, frequently object to undertaking journeys, from an opinion that their daily occupations are sufficient to produce all the salutary effects we expect from artificial exercise. It will be highly necessary to correct this mistake, by assuring such persons that, however useful the habitual exercise of an active, or even a laborious employment may be to *preserve* health, it must always be exchanged for one which excites new impressions, both upon the mind and body in every attempt to *restore* the system from that debility which is connected with pulmonary consumption.

As travelling is often rendered useless, and even hurtful in this disease from being pursued in an improper manner, it will be necessary to furnish our patients with such directions as will enable them to derive the greatest benefit from their journeys. I shall therefore, in this place, mention the substance of the directions which I have given in writing for many years to such consumptive patients as undertake journeys by my advice.

1. To *Avoid Fatigue*. Too much cannot be said to enforce this direction. It is the hinge on which the recovery or death of a consumptive patient

tient frequently turns. I repeat it again, therefore, that patients should be charged over and over when they set off on a journey, as well as when they use exercise of any kind to avoid fatigue. For this purpose, they should begin by travelling only a few miles in a day, and increase the distance of their stages as they increase their strength. By neglecting this practice, many persons have returned from journeys much worse than when they left home, and many have died in taverns, or at the houses of their friends on the road. Travelling in stage-coaches is seldom safe for a consumptive patient. They are often crowded; they give too much motion; and they afford by their short delays and distant stages, too little time for rest, or for taking the frequent refreshment which was formerly recommended.

2. To *Avoid travelling too soon in the Morning*, and after the *Going down of the Sun in the Evening*; and if the weather be hot, never to travel in the middle of the day. The sooner a patient breakfasts after he leaves his bed the better; and in no case should he leave his morning stage with an empty stomach.

3. If it should be necessary for a patient to lie down, or to sleep in the day time, he should be advised

advised to *undress* himself, and to cover his body between sheets or blankets. The usual ligatures of garters, stocks, kneebands, waistcoats and shoes, are very unfriendly to sound sleep ; hence persons who lie down with their cloaths on, often awake from an afternoon's nap in terror from dreams, or in a profuse sweat, or with a head-ach or sick stomach ; and generally out of humour. The surveyors are so sensible of the truth of this remark, that they always undress themselves when they sleep in the woods. An intelligent gentleman of this profession informed me that he had frequently seen young woodsmen who had refused to conform to this practice, so much indisposed in the morning, that after the experience of a few nights, they were forced to adopt it.

Great care should be taken in sleeping, whether in the day time, or at night, never to lie down in damp sheets. Dr. Sydenham excepts the danger from this quarter, when he speaks of the efficacy of riding on horseback in curing the consumption.

4. Patients who travel for health in this disorder should avoid all *large companies*, more especially *evening* and *night parties*. The air of a contaminated room, phlogisticated by the breath of

fifteen or twenty persons, and by the same number of burning candles, is poison to a consumptive patient. To avoid impure air from every other source, he should likewise avoid sleeping in a crowded room, or with curtains around his bed, and even with a bed-fellow.

5. Travelling, to be effectual in this disorder, should be conducted in such a manner as that a patient may escape the *extremes* of *heat* and *cold*. For this purpose he should pass the winter, and part of the spring in Georgia or South-Carolina, and the summer in New Hampshire, Massachusetts, or Vermont, or if he pleases, he may still more effectually shun the summer heats by crossing the lakes, and travelling along the shores of the St. Lawrence to the city of Quebec. He will thus escape the extremes of heat and cold, particularly the less avoidable one of heat; for I have constantly found the hot month of July to be as unfriendly to consumptive patients in Pennsylvania, as the variable month of March. By these means too he will enjoy nearly an equable temperature of air in every month of the year; and his system will be free from the inconvenience of the alternate action of heat and cold upon it. The autumnal months should be spent in New-Jersey or Pennsylvania.

In these journeys from north to south, or from south to north, he should be careful, for reasons before mentioned, to keep at as great a distance as possible from the sea coast. Should this inquiry fall into the hands of a British physician, I would beg leave to suggest to him, whether more advantages would not accrue to his consumptive patients from advising them to cross the Atlantic ocean, and afterwards to pursue the tour which I have recommended, than by sending them to Portugal, France or Italy—Here they will arrive with such a mitigation of the violence of the disorder, in consequence of the length of their sea voyage, as will enable them immediately to begin their journeys on horseback. Here they will be exposed to fewer temptations to intemperance, or to unhealthy amusements, than in old European countries. And, lastly, in the whole course of this tour, they will travel among a people related to them by a sameness of language and manners, and by ancient or modern ties of citizenship. Long journeys for the recovery of health under circumstances so agreeable, should certainly be preferred to travelling among strangers of different nations, languages, and manners, on the continent of Europe.

6. To render travelling on horseback effectual in a consumption, it should be continued with moderate

derate intervals from *six to twelve months*. But the cure should not be rested upon a single journey. It should be repeated every *two or three years*, till our patient has passed the consumptive stages of life. Nay,—he must do more; he must acquire a *habit* of riding constantly, both at home and abroad; or, to use the words of Dr. Fuller, “he must, like a Tartar, learn to live on horseback, by which means he will acquire in time the constitution of a Tartar.”*

Where benefit is expected from a change of climate, as well as from travelling, patients should reside at least two years in the place which is chosen for that purpose. I have seldom known a residence for a shorter time in a foreign climate do much service.

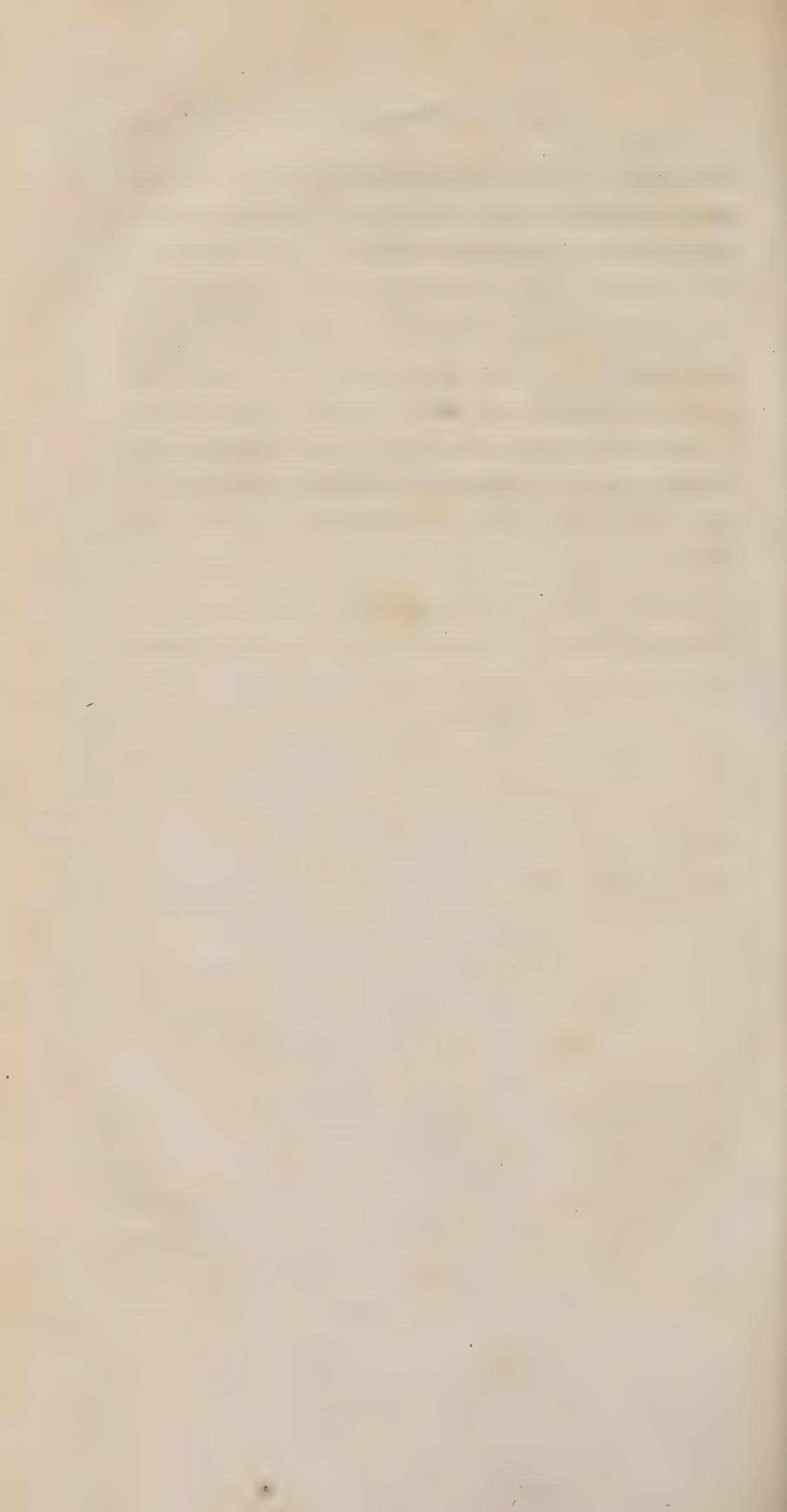
To secure a perfect obedience to medical advice, it would be extremely useful if consumptive patients could always be accompanied by a physician. Celsus says, he found it more easy to cure the dropsy in slaves than in freemen, because they more readily submitted to the restraints he imposed upon their appetites. Madness has become a curable disorder in England, since the physicians

* *Medicina Gymnastica*, p. 116.

of that country have opened private mad-houses, and have taken the entire and constant direction of their patients into their own hands. The same successful practice would probably follow the treatment of consumptions, if patients were constantly kept under the eye and authority of their physicians.—The keenness of appetite, and great stock of animal spirits, which those persons frequently possess, hurry them into many excesses which defeat the best concerted plans of a recovery ;—or, if they escape these irregularities, they are frequently seduced from our directions by every quack remedy which is recommended to them. Unfortunately the cough becomes a signal of their disorder, at every stage of their journey, and the easy or pleasant prescriptions of even hostlers and ferrymen, are often substituted to the self-denial and exertion which have been imposed by physicians. The love of life in these cases seems to level all capacities ; for I have observed persons of the most cultivated understandings to yield in common with the vulgar to the use of these prescriptions.

I cannot conclude this inquiry without adding, that the author of it derived from his paternal ancestors a predisposition to the pulmonary consumption, and that between the 18th and 43d years of his

his age, he has occasionally been afflicted with many of the symptoms of that disorder which he has described:—By the constant and faithful use of most of the remedies which he has recommended, he has enjoyed for several years nearly an uninterrupted exemption from pulmonary complaints. In humble gratitude, therefore, to that BEING, who condescends to be called the preserver of men, he thus publicly devotes the result of his experience and inquiries to the benefit of such of his fellow-creatures as may be afflicted with the same disorder, sincerely wishing that they may be as useful to them, as they have been to the author.



O B S E R V A T I O N S

ON THE

SYMPTOMS AND CURE

OF

D R O P S I E S.

OBSERVATIONS, &c.

WHETHER we admit the exhaling and absorbing vessels to be affected in general dropsies by preternatural debility, palsey, or rupture, or by a retrograde motion of their fluids, it is certain that their exhaling and absorbing power is materially affected by too much, or too little action in the arterial system. That too little action in the arteries should favour dropfical effusions, has been long observed, but it has been less obvious that the same effusions are sometimes promoted, and their absorption prevented, by too much action in these vessels. That this fact should have escaped our notice, is the more remarkable, considering how long we have been accustomed to seeing serous swellings in the joints in the acute rheumatism, and copious, but partial effusions of water in the form of sweat, in every species of inflammatory fever.

It is nothing new that the healthy action of one part, should depend upon the healthy action of another part of the system. We see it in many of the diseases of the nerves and brain. The tetanus is cured by exciting a tone in the arterial system ; madness is cured by lessening the action of the arteries by copious blood-letting, and epilepsy and hysteria are often mitigated by the moderate use of the same remedy.

By too much action in the arterial system, I mean a certain morbid excitement in the arteries, accompanied by preternatural force, which is obvious to the sense of touch. It differs from the morbid excitement of the arteries, which takes place in common inflammatory fevers, in being attended by less febrile heat, and with little or no pain in the head or limbs. The thirst is nearly the same in this state of dropfy, as in inflammatory fevers. I include here those dropsies only in which the whole system is affected by what is called an hydropic diathesis,

That debility should, under certain circumstances, dispose to excessive action, and that excessive action should occur in one part of the body, at the same time that debility prevailed in every other, are abundantly evident from the history and phenomena

phenomena of many diseases. Inflammatory fever, active hæmorrhages, tonic gout, asthma, apoplexy, and palsey, however much they are accompanied by excessive action in the arterial system, are always preceded by original debility, and are always accompanied by obvious debility in every other part of the system.

But it has been less observed by physicians that an undue force or excess of action occurs in the arterial system in certain dropsies, and that the same theory which explains the union of predisposing and nearly general debility, with a partial excitement and preternatural action in the arterial system, in the diseases before mentioned, will explain the symptoms and cure of certain dropsies.

That debility predisposes to every state of dropsy, is evident from the history of all the remote and occasional causes which produce them. It will be unnecessary to mention these causes, as they are to be found in all our systems of physic: Nor will it be necessary to mention any proofs of the existence of debility in nearly every part of the body. It is too plain to be denied. I shall only mention the symptoms which indicate a morbid excitement and preternatural action of the arterial system. These are,

1. A *hard, full, and quick* pulse. This symptom I believe, is more common in dropsey than is generally supposed, for many physicians visit and examine patients in these disorders, without feeling the pulse. Dr. Home mentions the *frequency* of the pulse, in the patients whose cures he has recorded, * but he takes no notice of its force except in two cases. Dr. Zimmerman, in his account of the dropsey which terminated the life of the late king of Prussia, tells us that he found his pulse *hard and full*. I have repeatedly found it full and hard in every state of dropsey, and more especially in the first stage of the disorder. Indeed I have seldom found it otherwise in the beginning of the dropsey of the breast.

2. **SIZY BLOOD.** This has been taken notice of by many practical writers, and has very justly been ascribed, under certain circumstances of blood-letting, to an excessive action of the vessels upon the blood.

3. *Alternation of dropsey with certain diseases which were evidently accompanied by excess of action in the arterial system.* I have seen anasarca alternate with vertigo, and both ascites and anasarca

* Medical Facts.

alternate

alternate with tonic madness. A case of nearly the same kind is related by Dr. Mead.

4. *The occasional connection of certain dropsies with diseases evidently of an inflammatory nature, particularly pneumonia, rheumatism, and gout.*

5. Spontaneous haemorrhages from the lungs, haemorrhoidal vessels, and nose, cases of which shall be mentioned hereafter, when we come to treat of the cure of dropsies.

6. *The appearance of dropsies in the winter and spring, in habits previously affected by the intermitting fever.* The debility produced by this state of fever, frequently disposes to inflammatory diathesis, as soon as the body is exposed to the alternate action of heat and cold, nor is this inflammatory diathesis always laid aside, by the transition of the intermitting fever into a dropsy, in the succeeding cold weather.

7. *The injurious effects of stimulating medicines in certain dropsies, prove that there exists in them, at times, too much action in the blood-vessels.* Dr. Tissot, in a letter to Dr. Haller, "De Vario-
lis, apoplexia, et hydrope," condemns in strong terms, the use of opium in the dropsy. Now the

bad effects of this medicine in dropſies, must have arisen from its having been given in cases of too much action in the arterial system; for opium, we know, increases, by its stimulating qualities, the action and tone of the blood-vessels, and hence we find, it has been prescribed with success in dropſies of too little action in the system.

But the existence of too much action in the arterial system in certain dropſies, will appear more fully from the history of the effects of the remedies which have been employed either by design or accident in the cure of these disorders. I shall first mention the remedies which have been used with success in tonic dropſies; and afterwards mention those which have been given with success in dropſies of a weak action of the system. I have constantly proposed to treat only of the theory and cure of dropſies in general, without specifying any of the numerous names it derives from the different parts of the body in which they may be seated; but in speaking of the remedies which have been used with advantage in both the tonic and atonic states, I shall occasionally mention the name or seat of the dropſy in which the remedy has done service.

The first Remedy that I shall mention for dropſies is *Blood-letting*. Dr. Hoffman and Dr. Home both

both cured dropsies accompanied by pulmonic congestion by means of this remedy. Dr. Monroe quotes a case of dropsey from Sponius, in which bleeding succeeded, but not till after it had been used twenty times.* Mr. Cruikshank relates a case† of accidental bleeding, which confirms the efficacy of blood-letting in these disorders. He tells us that he attended a patient with dropsical swellings in his legs, who had had a hoarseness for two years. One morning in stooping to buckle his shoes, he bursted a blood-vessel in his lungs, from which he lost a quart of blood; in consequence of which, both the swellings and the hoarseness went off gradually, and he continued well two years afterwards. I have known one case in which spontaneous hæmorrhages from the hæmorrhoidal vessels, and from the nose, suddenly reduced universal dropsical swellings. In this patient there had been an uncommon tension and fullness in the pulse.

To these facts, I can with pleasure add, that I have cured one person of ascites, and three of ana-sarca, (in the course of the three last years) by means of blood-letting. It has been used with

* *Treatise on the Dropsey.*

† *Treatise on the Lymphatics.*

equal success by Dr. Rawlings, of Maryland, in a case of anasarca which had resisted nitre, and other powerful medicines commonly prescribed for that disorder. *

In those deplorable cases of Hydrothorax, which do not admit of a radical cure, I have given temporary relief, and thereby protracted life by taking away occasionally a few ounces of blood.—Had Dr. Zimmerman used this remedy in the case of the king of Prussia, I cannot help thinking from the account which the Doctor gives us of the diet and pulse of his royal patient, that he would have lessened his sufferings much more than by plentiful doses of dandelion; for I take it for granted, from the candour and integrity which the Doctor discovered in all his visits to the king, that he did not expect that dandelion, or any other medicine, would cure him.

Although a *full* and *tense* pulse is always an indication of the necessity of bleeding; yet I can easily conceive there may be such congestions, and

* Dr. Miller, formerly of Delaware, now of New York, has used bleeding in dropsies in several cases with success. I have received many other communications of the efficacy of this remedy from my pupils, since the publication of the first edition of this volume.

such a degree of stimulus to the arterial system, as to produce indirect debility, and a *low* or *weak* pulse. Two cases of this kind are related by Dr. Monroe, one of which was cured by bleeding. The same symptom of a low and weak pulse is often met with in the *first* stage of pneumonia, and apoplexy, and is only to be removed by the plentiful use of the same remedy.

II. Vomits have often been given with advantage in dropsies. Dr. Home says, that squills were useful in these disorders only when they produced a vomiting. The ultimate action of vomits is certainly debilitating; but in producing a diminution of excitement and action in the arterial system, they dispose the lymphatics to absorb and discharge large quantities of water.—The efficacy of vomits in promoting the absorption of stagnating fluids is not confined to dropsies. Mr. Hunter was once called to visit a patient in whom he found a bubo in such a state that he purposed to open it the next day. In the mean while, the patient went on board of a vessel where he was severely affected by sea-sickness and vomiting; in consequence of which the bubo disappeared, and the patient recovered without the use of the knife.

Mr.

Mr. Cruikshank further mentions a case* of a swelling in the knee being nearly cured by a patient vomiting eight and forty hours in consequence of his taking a large dose of the salt of tartar instead of soluble tartar.

III. Purges. The efficacy of this remedy in the cure of dropsies, has been acknowledged by physicians in all ages and countries. Jalap, calomel, scammony and gamboge, are often preferred for this purpose; but I have heard of two cases of ascites being cured by a table spoonful of sweet oil taken every day. It probably acted only as a gentle laxative. The cream of tartar so highly commended by Dr. Home, seems to act *chiefly* in the same way. Gherlius, from whom Dr. Home learned the use of this medicine, says, that all the persons whom he cured by it were in the vigour of life, and that their diseases had been only of a few months continuance. From these two circumstances, it is most probable they were dropsies of excessive action in the arterial system. He adds further that the persons who were cured by this medicine, were reduced very low by the use of it. Dr. Home says that it produced the same effect upon the patients whom he cured by it, in the In-

* Letter to Mr. Clare, p. 166.

ſirmary of Edinburgh. Dr. Sydenham prefers gentle to drastic purges, and recommends the exhibition of them every day. Both drastic and gentle purges act by diminishing the action of the arterial system, and thereby promote the absorption and discharge of water. That purges promote absorption, we learn not only from their effects in dropſies, but from an experiment related by Mr. Cruikſhank,* of a man who acquired ſeveral ounces of weight after the operation of a purge. The absorption in this case was from the atmosphere. So great is the effect of purges in promoting absorption, that Mr. Hunter ſuppoſes the matter of a gonorrhœa, or of topical venereal ulcers to be conveyed by them in ſome instances into every part of the body.

IV. *Certain Medicines*, which by leſſening the action of the arterial ſystem, favour the absorption and evacuation of water. The only medicines of this claſs which I ſhall name are *nitre*, *cream of tartar*, and *foxglove*.

1. Two ounces of nitre diſſolved in a pint of water, and a wine-glaſs full of it taken three times a-day have performed perfect cures, in two caſes of ascites, which have come under my notice. I

* Letter to Mr. Clare, p. 117.

think

think I have cured two persons of anasarca, by giving one scruple of the same medicine three times a-day for several weeks. The two last cures were evidently dropfies of too much action in the arterial system. Where nitre has been given in atonic dropfies it has generally been useless, and sometimes done harm. I have seen one instance of an incurable diarrhoea after tapping, which I suspected arose from the destruction of the tone of the stomach and bowels, by large and long continued doses of nitre, which the patient had previously taken by the advice of a person who had been cured by that remedy. To avoid this, or any other inconvenience from the use of nitre in dropfies, it should be given at first in small doses, and should always be laid aside, if it should prove ineffectual after having been given two or three weeks.

2. I can say nothing of the efficacy of cream of tartar in dropfies from my own experience, where it has not acted as a purge. Perhaps my want of decision upon this subject has arisen only from my not having persisted in the use of it for the same length of time which is mentioned by Dr. Home.

3. There has been much inquiry into the manner in which foxglove acts in curing dropfies. It has been supposed to exert a specific action on the

the kidneys as a diuretic ; but I am rather disposed to believe, that it acts only by lessening the action of the arterial system by a sedative quality which appears to reside in it. I am led to adopt this opinion by the facts which are related by Dr. Darwin, who says, that he had seen it do service in the dropſy, without producing any immediate discharge of water, and that it ſeldom ſucceeded until it had previously debilitated the body.

Dr. Warren says, that he ſeldom found tonics necessary after he had discharged the water in the dropſy by this medicine, probably because he reduced the arterial system by it, from an excessive to a healthy state of action. And even Dr. Withering, who ſupposes the foxglove to be im- proper in plethoric habits, confeſſes that tonics, after its use " very often deceived his expecca- tions," probably by reproducing the ſame morbid and excessive action in the arterial system, which he had just before removed by means of the fox- glove. I am the more disposed to adopt this opinion of the manner in which this medicine acts, from observing the good effects which are ascribed to it in vertigo—madness—hæmorrhages*—and pulmonary conſumption, when these diseases are

* Ferriar.

accompañed

accompañed by too much action in the arterial system.

There are different opinions concerning the efficacy of this medicine in dropſies. From the cases related by Dr. Withering, it appears to have done good; but from those related by Dr. Lettsom* it seems to have done harm. I suspect the different accounts of those two gentlemen have arisen from their having given it in different states of the system. In dropſies of too much action, I believe it has sometimes been used with success, but in atonic dropſies, I am satisfied that it is not only an useless but a dangerous medicine. I am sorry to add further, that after many trials of this medicine I have failed in most of the cases in which I have given it. I have discharged the water in three instances by it, but the disease returned, and my patients finally died.—I can ascribe only one complete cure to its use which was in the year 1789, in a young man in the Pennsylvania hospital, of five-and-thirty years of age, of a robust habit, and plethoric pulse.

Where medicines have once been in use, and afterwards fall into disrepute, as was the case with

* *Medical Memoirs, vol. II,*

the Foxglove, I suspect the cases in which they were useful, to have been either few or doubtful, and that the cases in which they had done harm, were so much more numerous and unequivocal, as justly to banish them from the *materia medica*.

V. HARD LABOUR, or exercise in such a degree as to produce fatigue, have in several instances cured the dropsey. A Dispensary patient in this city was cured of this disorder by sawing wood. And a patient in an ascites under my care in the Pennsylvania hospital, had his belly reduced seven inches in circumference in one day, by the labour of carrying wood from the yard into the hospital. A second patient belonging to the Philadelphia Dispensary was cured by walking to Lancaster, 66 miles from the city, in the middle of winter. The efficacy of travelling in this disorder in cold weather, is taken notice of by Dr. Monroe, who quotes a case from Dr. Holler, of a French merchant, who was cured of a dropsey by a journey from Paris to England, in the winter season. It would seem, that in these two cases, the *cold* co-operated as a sedative with the fatigue produced by labour or exercise, in reducing the tone of the arterial system.

VI. LOW DIET. I have heard of a woman who was cured of a dropsy by eating nothing but boiled beans for three weeks, and drinking nothing but the water in which they had been boiled. Many other cases of the good effects of low diet in dropseys are to be found in the records of medicine.

VII. THIRST. This cruel remedy acts by debilitating the system in two ways ; 1st, By abstracting the stimulus of distention ; and, 2dly, By preventing a fresh supply of water to replace that which is discharged by the ordinary emunctories of nature.

VIII. FASTING. An accidental circumstance related by Sir John Hawkins, in the life of Dr. Johnson, first led me to observe the good effects of fasting in the dropsy. If the fact alluded to stood alone under the present head of this essay, it would be sufficient to establish the existence of too much action, and the efficacy of debilitating remedies in certain dropseys. I am the more disposed to lay a good deal of stress upon this fact, as it was the clue which conducted me out of the labyrinth of empirical practice, in which I had been bewildered for many years, and finally led me to adopt the principles and practice which I am now endeavouring

endeavoring to establish. The passage which contains this interesting fact is as follows. "A few days after (says Sir John) he [meaning Dr. Johnson] sent for me, and informed me, that he had discovered in himself the symptoms of a dropsey, and indeed, his very much increased bulk, and the swollen appearance of his legs, seemed to indicate no less. It was on Thursday that I had this conversation with him, in the course thereof, he declared that he intended to devote the whole of the next day to *fasting*, humiliation, and such other devotional exercises as became a man in his situation: On the Saturday following I made him a visit, and upon entering his room, I observed in his countenance such a serenity as indicated, that some remarkable crisis of his disorder had produced a change in his feelings. He told me, that pursuant to the resolution he had mentioned to me, he had spent the preceding day in an abstraction from all worldly concerns—that to prevent interruption he had in the morning ordered *Frank*, [his servant] not to admit any one to him, and the better to enforce the charge, had added these awful words, *for your master is preparing himself to die*. He then mentioned to me, that in the course of this exercise he found himself relieved from the disorder which had been growing upon him, and was

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" becoming very oppressive, viz. the *dropsey*, by
" the gradual evacuation of water, to the amount
" of *twenty pints*, a like instance whereof he had
" never before experienced." Sir John Hawkins
ascribes this immense discharge of water to the
influence of Dr. Johnson's prayers; but he ne-
glects to take notice, that these prayers were
answered in this instance, as they are in many
others, in a perfect consistence with the com-
mon and established laws of nature.

To satisfy myself that this discharge of water, in the case of Dr. Johnson, was produced by the fasting only, I recommended it soon after I read the above account to a gentlewoman whom I was then attending in an ascites. I was delighted with the effects of it. Her urine, which for some time before had not exceeded half a pint a-day, amounted to *two quarts* on the day she fasted. I repeated the same prescription once a week for several weeks, and each time was informed of an increase of urine, though it was considerably less in the last experiments than in the first. Two patients in an ascites, to whom I prescribed the same remedy, in the Pennsylvania Hospital, the one in the winter of 1790, and the other in the winter of 1792, ex-
hibited proofs in the presence of many of the students of the university, equally satisfactory of
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the efficacy of fasting in suddenly increasing the quantity of urine.

IX. FEAR. This passion is evidently of a debilitating nature, and therefore, it has frequently afforded an accidental aid in the cure of dropsies, of too much action. I suspect, that the fear of death, which was so distinguishing a part of the character of Dr. Johnson, added a good deal to the efficacy of fasting, in procuring the immense discharge of water beforementioned. In support of the efficacy of fear simply applied, in discharging water from the body in dropsies, I shall mention the following facts.

In a letter which I received from Dr. John Pennington, dated Edinburgh, August 3, 1790, I was favoured with the following communication.

“ Since the conversation I had with you on the subject of the dropsy, I feel more and more inclined
“ to adopt your opinion. I can furnish you with
“ a fact which I learned from a Danish sailor, on
“ my passage to this country, which is much in favour of your doctrine. A sailor in an ascites, fell
“ off the end of the yard into the sea; the weather being calm, he was taken up unhurt, but to
“ use the sailor’s own words, who told me the story, he was frightened half to death, and as

“ soon as he was taken out of the water, he dis-
“ charged a gallon of urine or more. A doctor on
“ board ascribed this large evacuation to sea bath-
“ ing, and accordingly ordered the man to be
“ dipped in the sea every morning, much against
“ his will, for my informant adds, that he had not
“ forgotten his fall, and that in four weeks he was
“ perfectly well. I think this fact can only be
“ explained on your principles. The sedative
“ operation of *fear*, was no doubt the cause of his
“ cure*.”

Dr. Hall, of York-town in Pennsylvania, informed me, that he had been called to visit a young woman of 19 years of age, who had taken all the usual remedies for ascites without effect. He at once proposed to her the operation of tapping. To this she objected, but so great was the *fear* of this operation, which the proposal of it suddenly excited in her mind, that it brought on a plentiful discharge of urine, which in a few days perfectly removed her disorder.

* There is an account of an ascites being cured by a fall from an open chaise recorded in the third volume of the medical Memoirs by M. Lowdell. I have heard of a complete recovery from dropsy, having suddenly followed a fall from a horse. In both these cases may not fear have contributed very much to the cures?

On the 27th of August, 1790, I visited a gentlewoman in this city with the late Dr. Jones, in an ascites. We told her for the first time, that she could not be relieved without being tapped. She appeared to be much terrified upon hearing our opinion, and said that she would consider of it. I saw her two days afterwards, when she told me with a smile on her countenance, that she hoped she should get well without tapping, for that she had discharged two quarts of water in the course of the day after we had advised her to submit to that operation. For many days before, she had not discharged more than two or three gills in twenty-four hours. The operation, notwithstanding, was still indicated, and she submitted to be tapped a few days afterwards.

I tapped the same gentlewoman a second time in January 1791. She was much terrified while I was preparing for the operation, and fainted immediately after the puncture was made. The second time that I visited her after the operation was performed, she told me (without being interrogated on that subject) that she had discharged a pint and an half of urine, within twenty minutes after I left the room on the day I tapped her. What made this discharge the more remarkable was, she had not made more than a table-spoon-

ful of water in a day for several days before she was tapped.

I have seen similar discharges of urine in two other cases of tapping which have come under my notice, but they resembled so nearly those which have been mentioned, that it will be unnecessary to record them.

But the influence of fear upon the system in the dropfy, extends far beyond the effects which I have ascribed to it. Dr. Currie, of this city, informed me that he called about four years ago, by appointment, to tap a woman. He no sooner entered the room than he observed her, as he thought, to faint away. He attempted to recover her, but to no purpose. She died of a sudden paroxysm of fear.

It is a matter of surprise, that we should have remained so long ignorant of the influence of fear upon the urinary organs in dropfies, after having been so long familiar with the same effect of that passion in the hysteria.

I cannot dismiss the remedies which discharge water from the body through the urinary passages, without taking notice, that they furnish an additional

additional argument in favour of blood-letting in dropſies, for they act, not by discharging the stagnating water, but by creating ſuch a plentiful ſecreſtion in the kidneys from the ſerum of the circulating blood, as to make room for the absorption and conveyance of the stagnating water into the blood-veffels.

Now the ſame effect may be produced in all tonic or inflammatory dropſies, with more certainty and safety, by means of blood-letting.

In recommending the antiphlogiſtic treatment of certain dropſies, I must here confine myſelf to the dropſies of ſuch climates as diſpoſe to diſeafes of too much action in the ſystem. I am ſatisfied that it will often be proper in the middle and eastern ſtates of America; and I have lately met with two obſeruations, which ſhew that it has been uſed with ſucceſs at Vienna in Germany. Dr. Stoll tells us, that in the month of January, 1780, "Hydropic and aſthmatic patients diſcover-
" ed more or leſs marks of inflammatory diathetis,
" and that blood was drawn from them with a ſpa-
" ring hand with advantage;" and in the month of November of the ſame year, he ſays, "The
" ſtronger diuretis injured dropſical patients in
" this ſeafon; but an antiphlogiſtic drink, compo-

" ſed

“ fed of a quart of the decoction of grafts, with
“ two ounces of simple oxymel, and nitre and
“ cream of tartar, of each a drachm, did ser-
“ vice.” * It is probable that the same difference
should be observed between the treatment of drop-
pies in warm and cold climates that is observed in
the treatment of inflammatory fevers. The tonic
action probably exists in the system in both coun-
tries. In the former it resembles the tides which
are suddenly produced by a shower of rain, and as
suddenly disappear; whereas, in the latter, it may
be compared to those tides which are produced
by the slow and gradual addition of water from
numerous streams, and which continue for days
and weeks together to exhibit marks of violence
in every part of their course.

I come now to say a few words upon Atonic
Dropsies. They may easily be distinguished from
those which have been described, by occurring in
habits naturally weak; by being produced by the
operation of chronic causes; by a weak and
quick pulse, and by little or no preternatural heat
or thirst.

* *Ratio Medendi Nefocomio Practico Vindobonensi*. Vol.
iv. p. 56 and 99.

The Remedies for Atonic Dropſies are all such stimulating ſubſtances as increase the action of the arterial ſystem, or determine the fluids to the urinary organs. These are,

I. BITTER and AROMATIC SUBSTANCES of all kinds exhibited in ſubſtance or in infuſions of wine, ſpirit, beer, or water,

II. CERTAIN ACRID VEGETABLES, ſuch as ſcurvy-graſs, horſe-radish, muſtard, water-creeſes, and gaſlic. I knew an old man who was perfectly cured of an anafarca, by eating water-creeſes, on bread and butter.

III. OPIUM. The efficacy of this medicine in dropſies has been attested by Dr. Willis, and ſeveral other practical writers. It ſeems to poſſeſs almost an exclusive power of acting alike upon the arterial, the lymphatic, the glandular, and the nervous ſystems.

IV. METALLIC TONICS, ſuch as chalybeate medicines of all kinds, and the mild preparations of copper and mercury. I once cured an incipient ascites and anafarca by large doſes of the rust of iron; and I have cured many dropſies by giving mercury in ſuch quantities as to excite a plentiful ſalivation.

ſalivation. I have, it is true, often given it without effect, probably from my former ignorance of the tonic action of the arteries, which so frequently occurs in dropſies, and in which cafes mercury must necessarily have done harm.

V. DIURETICS, consisting of alkaline salts, nitre, and the oxymels of squills and colchicum. It is difficult to determine how far these medicines produce their ſalutary effects by acting directly upon the kidneys. It is remarkable that these organs are ſeldom affected in dropſies, and that their diseases are rarely followed by dropſical effusions in any part of the body.

VI. GENEROUS DIET, consisting of animal food, rendered cordial by ſpices; also ſound old wine.

VII. DILUTING DRINKS taken in ſuch large quantities as to excite the action of the vessels by the stimulus of diſtention. This effect has been produced, Sir George Baker informs us, by means of large draughts of ſimple water, and of cyder and water.* The influence of diſtention in pro-
moting

* The remark upon this fact by Sir George, is worthy of notice, and implies much more than was probably intended
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miting absorption is evident in the urinary and gall bladders, which frequently return their contents to the blood by the lymphatics, when they are unable to discharge them through their usual excretaries. Is it not probable that the distention produced by the large quantities of liquids which we are directed to administer after giving the fox-glove, may have been the means of performing some of those cures of dropsies, which have been ascribed to that remedy?

VIII. PRESSURE. Bandages bound tightly around the belly and limbs, sometimes prevent the increase or return of dropsical swellings. The influence of pressure upon the action of the lymphatics appears in the absorption of bone which frequently follows the pressure of contiguous tumours, also in the absorption of flesh which follows the long pressure of certain parts of the body upon a sick bed.

IX. FRICTIONS, either by means of a dry, or oiled hand, or with linen or flannel impregnated with volatile and other stimulating substances. I

ed by it. "When common means have failed, success has sometimes followed a method *directly contrary* to the established practice." — *Medical Transactions, Vol. II.*

have

have found evident advantages from following the advice of Dr. Cullen, by rubbing the lower extremities *upwards*, and that only in the *morning*.— I have been at a loss to account for the manner in which sweet oil acts when applied to dropsical swellings. If it act by a sedative power upon the blood-vessels, it will be more proper in tonic than atonic dropsies; but if it act by closing the pores, and thereby preventing the absorption of moisture from the air, it will be very proper in the state of dropſy which is now under consideration. It is in this manner that Dr. Cullen supposes that sweet oil, when applied to the body, cures that state of diabetes in which nothing but insipid water is discharged from the bladder.

X. HEAT applied either separately or combined with moisture in the form of warm or vapour baths, has often been used with success in dropsies of too little action. Dampier in his voyage round the world was cured of a dropſy by means of a copious sweat excited by burying himself in a bed of warm sand. Warm fomentations to the legs rendered moderately stimulating by the addition of saline or aromatic substances, have often done service in the atonic dropsical swellings of the lower extremities.

XI. The COLD-BATH. I can say nothing in favour of the efficacy of this remedy in dropsey, from my own experience. Its good effects seem to depend wholly on its increasing the excitability of the system to common stimuli, by the diminution of its excitement. If this be the case, I would ask, whether FEAR might not be employed for the same purpose, and thus become as useful in atonic, as it was formerly proved to be in tonic dropsey.

XII. WOUNDS, whether excited by cutting instruments, or by fire, provided they excite inflammation and action in the arteries, frequently cure atonic dropsey. The good effects of inflammation and action in these cases appear in the cure of hydrocele by means of the needle, or the caustic.

XIII. EXERCISE. This is probably as necessary in the atonic dropsey, as it is in the consumption, and should never be omitted when a patient is able to take it. The passive exercises of swinging, and riding in a carriage, are most proper in the lowest stage of the disorder; but as soon as the patient's strength will admit of it, he should ride on horseback. A journey should be preferred in this disorder, to short excursions from home.

In the application of each of the remedies which has been mentioned for the cure of both tonic and atonic Dropſies, great care should be taken to use them in such a manner, as to accommodate them to the strength and excitability of the patient's system. The most powerful remedies have often been rendered *hurtful* by being given in too large doses in the beginning; and *useless* by being given in too small doses, in the subsequent stages of the disorder.

I have avoided saying any thing of the usual operations for discharging water from different parts of the body, as my design was to treat only of the symptoms and cure of those dropſies which affect the whole system. I shall only remark, that if tapping and punctures have been more successful in the early, than in the late stage of these disorders, it is probably because the sudden or gradual evacuation of water takes down that excessive action in the arterial system, which is most common in their early stage, and thereby favours the speedy restoration of healthy action in the exhaling or lymphatic vessels.

Thus have I endeavoured to prove, that two different states of action take place in dropſies, and have mentioned the remedies which are pro-

per-

per for each of them under separate heads. But I suspect that dropſies are often connected with a certain intermediate or mixed action in the arterial system analogous to the typhoid action which takes place in certain fevers. I am led to adopt this opinion, not only from having observed mixed action to be so universal in most of the diseases of the arterial and nervous system, but because I have so frequently observed dropſical swellings to follow the scarlatina, and the puerile fever, two diseases which appear to derive their peculiar character from a mixture of excessive and moderate *force*, combined with irregularity of action in the arterial system. In dropſies of mixed action where too much force prevails in the action of some, and too little in the action of other of the arterial fibres, the remedies must be debilitating or stimulating, according to the greater or less predominance of tonic or atonic diathesis in the arterial system.

I shall conclude this history of dropſies, and of the different and opposite remedies which have cured them, by the following observations.

1. We learn, in the first place, from what has been said, the impropriety, and even danger of

prescribing stimulating medicines indiscriminately in every case of dropfy.

2. We are taught by the facts which have been mentioned, the reason why physicians have differed so much in their accounts of the same remedies, and why the same remedies have operated so differently in the hands of the same physicians. It is because they have been given without a reference to the two different states of the system, which have been described. Dr. Sydenham says, that he cured the first dropfical patient he was called to, by frequent purges. He began to exult in the discovery, as he thought, of a certain cure for dropfies, but his triumph was of short duration. The same remedy failed in the next case in which he prescribed it. The reason probably was, the dropfy in the first case, was of a tonic, but in the second, of an atonic nature ; for the latter was an ascites from a quartan ague. It is agreeable, however, to discover, from the theory of dropfies which has been laid down, that all the different remedies for these disorders have been proper in their nature, and improper only in the state of the system in which they have been given. As the discovery of truth in religion reconciles the principles of the most opposite sects ; so the discovery of truth in medicine,

medicine, reconciles the most opposite modes of practice. It would be happy if the inquirers after truth in medicine should be taught by such discoveries, to treat each other with tenderness and respect, and to wait with patience till accident, or time, shall combine into one perfect and consistent system, all the contradictory facts and opinions about which physicians have been so long divided.

3. If a state of excessive action in the arteries has been demonstrated in dropſies, both from its symptoms and remedies, and if these dropſies are evidently produced by previous debility, who will deny the existence of excessive action in certain hæmorrhages, in gout, palsy, apoplexy, and madness, notwithstanding they are all the offspring of predisposing debility? And who will deny the efficacy of bleeding, purges, and other debilitating medicines in certain states of those disorders, that has seen the same medicines administered with success in certain dropſies? To reject bleeding, purging, and the other remedies for excessive action in the system, in either of the above diseases, because that action was preceded by general debility, will lead us to reject them in the most acute inflammatory fevers, for these are as much the offspring of previous debility as dropſies or palsy. The previous debility of the former, differs from that

of the latter diseases, only in being of a more acute, or, in other words, of a shorter duration.

4. From the symptoms of tonic dropsy which have been mentioned, it follows, that the distinction of apoplexy into serous and sanguineous, affords no rational indication for a difference in the mode of treating that disorder. If an effusion of serum in the thorax, bowels, or limbs, produce a hard and full pulse, it is reasonable to suppose that the same symptom will be produced by the effusion of serum in the brain. But the dissections collected by Lieutaud,* place this opinion beyond all controversy. They prove that the symptoms of great and feeble action, as they appear in the pulse, follow alike the effusion of serum and blood in the brain. This fact will admit of an important application to the disease, which is to be the subject of the next inquiry.

5. From the influence which has been described, of the different states of action of the arterial system, upon the lymphatic vessels, in dropsey, we are led to reject the indiscriminate use of bark, mercury, and salt water, in the scrophula. When the action of the arteries is weak, those remedies

* *Historia Anatomico Medica*, Vol. ii.

are proper; but when an opposite state of the arterial system occurs, and above all, when scrophulous tumours are attended with inflammatory ulcers, stimulating medicines of all kinds are hurtful. By alternating the above remedies with a milk and vegetable diet, according to the tonic, or atonic states of the arterial system, I have lately succeeded in a case of scrophula, attended by large ulcers in the inguinal glands, which had for several years resisted the constant use of the three stimulating remedies which have been mentioned.

6. Notwithstanding I have supposed dropsey to be connected with a peculiar state of force in the blood vessels, yet I have not ventured to assert, that dropsey may not exist from an exclusive affection of the exhaling and absorbing vessels. I conceive this to be as possible, as for a fever to exist from an exclusive affection of the arteries, or an hysteria, from an exclusive affection of the nervous system. Nothing, however, can be said upon this subject, until physiology and pathology have taught us more of the structure and diseases of the lymphatic vessels. Nor have I ventured further to assert, that there are not medicines which may act specifically upon the lymphatics independently of the arteries. This, I conceive to be as possible as for asafoetida to act chiefly upon the nerves, or ipecacuanha

cacuanha and jalap upon the alimentary canal, without affecting other parts of the system. Until such medicines are discovered, it becomes us to avail ourselves of the access to the lymphatics, which is furnished us through the medium of the arteries by means of most of the remedies which have been mentioned,

7. If it should appear hereafter, that we have lessened the mortality of certain dropsies by the theory and practice which have been proposed, yet many cases of dropsy must still occur in which they will afford us no aid. The cases I allude to, are dropsies from enclosing cysts, from the ossification of certain arteries, from schirri of certain viscera, from large ruptures of exhaling or lymphatic vessels, from a peculiar and corrosive acrimony of the fluids, and lastly, from an exhausted state of the whole system. The records of medicine furnish us with instances of death from each of the above causes. But let us not despair. It becomes a physician to believe, that there is no disease necessarily incurable; and that there exist in the womb of time, certain remedies for all those disorders which elude the present limits of the healing art.

AN
I N Q U I R Y

INTO THE
CAUSES AND CURE

OF THE

INTERNAL DROPSY OF THE BRAIN.

I N Q U I R Y, &c.

HAVING for many years been unsuccessful in all the cases, except two, of internal dropsy of the brain, which came under my care, I began to entertain doubts of the common theory of this disorder, and to suspect that the effusion of water should be considered only as the effect of a primary inflammation, or congestion of blood in the brain.

I mentioned this opinion to my colleague Dr. Wistar in the month of June 1788, and delivered it the winter following in my lectures. The year afterwards I was confirmed in it by hearing that the same idea had occurred to Dr. Quin. I have since read Dr. Quin's treatise on the dropsy of the brain with

with great pleasure, and consider it as the first dawn of light which has been shed upon the theory of this disorder. In pursuing this subject, therefore, I shall avail myself of Dr. Quin's discoveries, and endeavour to arrange the facts and observations I have collected in such a manner, as to form a connected theory from them, which I hope will lead to a new and more successful mode of treating this disease.

I shall begin this Inquiry by delivering a few general propositions.

1. The Internal Dropfy of the Brain is a disorder confined chiefly to children.

2. In children the brain is larger in proportion to other parts of the body, than it is in adults ; and of course a greater proportion of blood is sent to it in childhood, than in the subsequent periods of life.—The effects of this determination of blood to the brain appear in the mucous discharge from the nose, and in the sores on the head and behind the ears, which are so common in childhood.

3. In all febrile diseases there is a preternatural determination of blood to the brain. This occurs in a more especial manner in children ; hence the reason

reason why they are so apt to be affected by convulsions in the eruptive fever of the small-pox, in dentition, in the diseases from worms, and in the first paroxysm of intermitting fevers.

4. In fevers of every kind, and in every stage of life, there is a disposition to effusion in that part to which there is the greatest determination. Thus in inflammatory fever, effusions take place in the lungs and in the joints. In the bilious fever they occur in the liver, and in the gout in every part of the body. The matter effused is always influenced by the structure of the part in which it takes place.

These propositions being premised, I should have proceeded to mention the remote causes of this disorder; but as this inquiry may possibly fall into the hands of some gentlemen who may not have access to the description of it as given by Dr. Whytt, Dr. Fothergill, and Dr. Quin, I shall introduce a history of its symptoms taken from the last of those authors. I prefer it to the histories by Dr. Whytt and Dr. Fothergill, as it accords most with the ordinary phænomena of this disorder in this country.

“ In general the patient is at first languid and inactive, often drowsy and peevish, but at inter-
“ vals

“ vals cheerful and apparently free from complaint. The appetite is weak, a nausea, and in many cases a vomiting occurs once or twice in the day, and the skin is observed to be hot and dry towards the evenings : soon after these symptoms have appeared, the patient is affected with a sharp head-ach, chiefly in the fore-part, or, if not there, generally in the crown of the head : it is sometimes, however, confined to one side of the head, and, in that case, when the posture of the body is erect, the head often inclines to to the side affected. We frequently find also, that the head-ach alternates with the affection of the stomach ; the vomiting being less troublesome when the pain is most violent, and vice versa ; other parts of the body are likewise subject to temporary attacks of pain, viz. the extremities, or the bowels, but more constantly the back of the neck, and between the scapulæ ; in all such cases the head is more free from uneasiness.

“ The patient dislikes the light at this period ; cries much, sleeps little, and when he does sleep, he grinds his teeth, picks his nose, appears to be uneasy, and starts often, screaming as if he were terrified ; the bowels are in the majority of cases very much confined, though it sometimes

“ times happens that they are in an opposite state :
“ the pulse in this early stage of the disorder, does
“ not usually indicate any material derangement.

“ When the symptoms above mentioned have
“ continued for a few days, subject as they always
“ are in this disease to great fluctuation, the axis of
“ one eye is generally found to be turned in to-
“ wards the nose ; the pupil on this side is rather
“ more dilated than the other ; and when both
“ eyes have the axes directed inwards, (which
“ sometimes happens), both pupils are larger than
“ they are observed to be in the eyes of healthy
“ persons : the vomiting becomes more constant,
“ and the head-ach more excruciating ; every
“ symptom of fever then makes its appearance,
“ the pulse is frequent, and the breathing quick ;
“ exacerbations of the fever take place towards
“ the evening, and the face is occasionally flushed ;
“ usually one cheek is much more affected than
“ the other ; temporary perspirations likewise
“ break forth, which are not followed by any al-
“ leviation of distress ; a discharge of blood from
“ the nose, which sometimes appears about this
“ period, is equally inefficacious.

“ Delirium, and that of the most violent kind,
“ particularly if the patient has arrived at the age
“ of

“ of puberty, now takes place, and with all the preceding symptoms of fever, continues for a while to increase, until about fourteen days, often a much shorter space of time, shall have elapsed since the appearance of the symptoms, which were first mentioned in the above detail.

“ The disease then undergoes that remarkable change, which sometimes suddenly points out the commencement of what has been called its second stage: the pulse becomes slow but unequal, both as to its strength, and the intervals between the pulsations; the pain of the head, or of whatever part had previously been affected, seems to abate, or at least the patient becomes apparently less sensible of it; the interrupted slumbers, or perpetual restlessness which prevailed during the earlier periods of the disorder, are now succeeded by an almost lethargic torpor, the strabismus, and dilatation of the pupil increase, the patient lies with one, or both eyes half closed, which, when minutely examined, are often found to be completely insensible to light; the vomiting ceases; whatever food or medicine is offered is usually swallowed with apparent voracity; the bowels at this period generally remain obstinately costive.

“ If

“ If every effort made by art fails to excite the sinking powers of life, the symptoms of what has been called the second stage are soon succeeded by others, which more certainly announce the approach of death.—The pulse again becomes equal, but so weak and quick, that it is almost impossible to count it; a difficulty of breathing, nearly resembling the *Ster-tor Apoplecticus*, is often observed; sometimes the eyes are suffused with blood, the flushing of the face is more frequent than before, but of shorter duration, and followed by a deadly pallor; red spots, or blotches, sometimes appear on the body and limbs; deglutition becomes difficult, and convulsions generally close the scene. In one case, I may observe, the jaws of a child of four years of age were so firmly locked for more than a day before death, that it was impossible to introduce either food or medicine into his mouth; and in another case, an hæmiplegia, attended with some remarkable circumstances, occurred during the two days preceding dissolution.

“ Having thus given as exact an history of *Apoplexia Hydrocephalica* as I could compile from the writings of others, and from my own observations,

“vations, I should think myself guilty of imposition on my readers, if I did not caution them that it must be considered merely as a general outline; the human brain seems to be so extremely capricious (if the expression may be allowed) in the signals it gives to other parts of the system, of the injury it suffers throughout the course of this disease, that although every symptom above mentioned does occasionally occur, and indeed few cases of the disease are to be met with, which do not exhibit many of them; yet it does not appear to me, that any one of them is constantly and inseparably connected with it.”

To this history I shall add a few facts, which are the result of observations made by myself, or communicated to me by my medical brethren.—These facts will serve to shew that there are many deviations from the history of the disorder which has been given, and that it is indeed as Dr. Quin has happily expressed it, of “a truly proteiform” nature.

I have not found the dilated and insensible pupil, the puking, the delirium, or the strabismus, to attend universally in this disease.

I saw one case in which the appetite was unimpaired from the first to the last stage of the disorder.

I have met with one case in which the disorder was attended by blindness, and another by double vision.

I have observed an uncommon acuteness in hearing to attend two cases of this disorder. In one of them the noise of the sparks which were discharged from a hickory fire, produced great pain and startings which threatened convulsions.

I have seen three cases in which the disease terminated in hemiplegia. In two of them it proved fatal in a few days—in the third it has continued for nearly eighteen months.

I have met with one case in which no preternatural slowness or intermission was ever perceived in the pulse.

I have seen the disease in children of nearly all ages. I once saw it in a child of six weeks old. It was preceded by the cholera infantum.

In the month of March 1771, I obtained a gill of water from the ventricles of the brain of a negro girl of nine years of age, who died of this disorder, who complained in no stage of it of a pain in her head or limbs, nor of a sick stomach. The disorder in this case was introduced suddenly by a pain in the breast, a fever, and the usual symptoms of a catarrh.

Dr. Wistar informed me that he had likewise met with a case of internal dropsy of the brain, in which there was a total absence of pain in the head.

Dr. Carson informed me that he had attended a child in this disorder that discovered, for some days before it died, the symptom of hydrophobia.

Dr. Currie obtained, by dissection, seven ounces of water from the brain of a child which died of this disorder; in whom he assured me no dilatation of the pupil, strabismus, sickness, or loss of appetite had attended, and but very little head-ach.

The causes which induce this disease, act either *directly* on the brain, or *indirectly* upon it, through the medium of the whole system.

The causes which act *directly* on the brain are falls or bruises upon the head, certain positions of the body, and childish plays which bring on congestion or inflammation, and afterwards an effusion of water in the brain.

The *indirect* causes of this disorder are more numerous, and more frequent, though less suspected, than those which have been mentioned. The following diseases of the whole system appear to act indirectly in producing an internal dropfy of the brain.

1. *Intermitting, remitting, and continual fevers.* Of the effects of these fevers in inducing this disorder, many cases are recorded by Lieutaud. *

My former pupil, Dr. Woodhouse, has furnished me with a dissection in which the disease was evidently the effect of the remitting fever. That state of continual fever which has been distinguished by the name of typhus, is often the remote cause of this disorder. The languor and weakness in all the muscles of voluntary motion, the head-ach, the inclination to rest and sleep, and the disposition to be disturbed, or terrified by

* *Historia Anatomica-Medica.* Vol. II.

dreams, which are said to be the precursors of water in the brain, I believe are frequently symptoms of a typhus fever which terminates in an inflammation, or effusion of water in the brain.— The history which is given of the typhus state of fever in children by Dr. Butter, * seems to favour this opinion.

2. The *Rheumatism*. Of this I have known two instances. Dr. Lettsom has recorded a case, from the same cause. † The pains in the limbs, which are supposed to be the effect, I suspect, are frequently the cause of the disorder.

3. The *Pulmonary Consumption*. Of the connection of this disease with an internal dropsy of the brain, Dr. Percival has furnished us with the following communication : ‡ “ Mr. C——’s daughter, aged nine years, after labouring under the phthisis pulmonalis four months, was affected with unusual pains in her head. These rapidly increased so as to occasion frequent screamings. The cough, which had before been extremely

* Treatise on the Infantile Remitting Fever.

† Medical Memoirs, Vol. I. p. 174.

‡ Essays, Medical, Philosophical, and Experimental, Vol. II. p. 339, 340.

“ violent, and was attended with stitches in the
“ breast, now abated, and in a few days ceased
“ almost entirely. The pupils of the eyes became
“ dilated, a strabismus ensued, and in about a week
“ death put an end to her agonies. Whether this
“ affection of the head arose from the effusion of
“ water or of blood, is uncertain, but its influence
“ on the state of the lungs is worthy of notice.”

Dr. Quin likewise mentions a case from Dr. Cullen's private practice, in which an internal dropfy of the brain followed a pulmonary consumption. Lieutaud mentions three cases of the same kind, * and two in which it succeeded a catarrh. †

4. *Eruptive Fevers.* Dr. Odier informs us, ‡ that he had seen four cases in which it had followed the small-pox, measles, and scarlatina. Dr. Lettsom mentions a case in which it followed the small-pox, § and I have seen one in which it was obviously the effects of debility induced upon the system by the measles.

* *Historia Anatomica-Medica*, Vol. II. Lib. tertius.
Obs. 380, 394, 1121.

† Obs. 383, 431.

‡ *Medical Journal.*

§ *Medical Memoirs*, Vol. I. p. 171.

5. *Worms.* Notwithstanding the discharge of worms gives no relief in this disorder, yet there is good reason to believe, that it has, in some instances, been produced by them.

6. From the dissections of Lieutaud, Quin, and others, it appears further, that the internal dropsy of the brain has been observed to succeed each of the following disorders—viz. The colic—palsy—melancholy—dysentery—dentition—infestation—scrophula—and the sudden healing of old sores. I have seen two cases of it from the last cause, and one in which it was produced by the action of the vernal sun alone upon the system.

From the facts which have been enumerated, and from dissections to be mentioned hereafter, it appears, that the disease in its first stage is the effect of causes which produce a less degree of that inflammation which constitutes phrenitis, and that its second stage is the effect of a less degree of that effusion, which produces serous apoplexy in adults. The former partakes of the nature of the chronic inflammation of Dr. Cullen, and of the asthenic inflammation of Dr. Brown. I have taken the liberty to call it *Phrenicula*, from its being a diminutive species or state of phrenitis. It bears the same relation to phrenitis when it arises from indirect

rect causes, which pneumonicula does to pneumonia,—and it is produced nearly in the same manner as the pulmonary consumption, by debilitating causes which act primarily on the whole system. The peculiar size and texture of the brain, seem to invite the inflammation and effusions which follow debility, to that organ in childhood, just as the peculiar structure and situation of the lungs invite the same morbid phænomena to them, after the body has acquired its growth, in youth and middle life. In the latter stage which has been mentioned, the internal dropfy of the brain partakes of some of the properties of apoplexy. It differs from it in being the effect of a *slow*, instead of a *sudden* effusion of water or blood, and in being the effect of causes which are of an acute instead of a chronic nature. The more advanced persons are in life who are affected by this disorder, the more it approaches to the nature of the common apoplexy, by a speedy termination in life or death. Dr. Cullen has called it simply by the name of “apoplexia hydrocephalica.” I have preferred for this stage of the disorder the term of *chronic apoplexy*; for I believe with Dr. Quin, that it has no connection with an hydropic diathesis of the whole system. I am forced to adopt this opinion, from my having never seen it accompanied by dropfical

effusions in other parts of the body, nor a general dropsy accompanied by an internal dropsy of the brain. No more occurs in this disease than takes place when hydrothorax follows an inflammation of the lungs, or when serous effusions follow an inflammation of the joints. I do not suppose that both inflammation and effusion always attend in this disorder; on the contrary, dissections have shewn some cases of inflammation, with little or no effusion, and some of effusion without inflammation. Perhaps this variety may have been produced by the different stages of the disease in which death and the inspection of the brain took place. Neither do I suppose, that the two stages which have been mentioned, always succeed each other in the common order of inflammation and effusion. In every case where the full tense—slow and intermitting pulse occurs, I believe there is inflammation; and as this state of the pulse occurs in most cases in the beginning of the disorder, I suppose the inflammation, in most cases, to precede the effusion of water. I have met with only one case in which the slow and tense pulse was absent; and out of six dissections of patients whom I have lost by this disorder, the brains of four of them exhibited marks of inflammation.

Having

Having adopted the theory of this disease, which I have delivered several years ago, I resolved upon such a change in my practice as should accord with it. The first remedy indicated by it was

I. BLOOD-LETTING. I shall briefly mention the effects of this remedy in all the cases in which I have prescribed it.

C A S E I.

On the 15th of November, 1790, I was called to visit the daughter of William Webb, aged four years, who was indisposed with a cough—a pain in her bowels—a coma—great sensibility of her eyes to light—costiveness—and a suppression of urine—a flow and irregular, but tense pulse—dilated pupils, but no head-ach. I found upon inquiry, that she had received a hurt on her head by a fall, about seven weeks before I saw her. From this information, as well as from her symptoms, I had no doubt of the disorder being the internal dropsy of the brain. I advised the loss of five ounces of blood, which gave her some relief. The blood was fizzy. The next day she took a dose of jalap and calomel, which operated twelve times. On the 18th she lost four ounces more of blood, which

was

was more fizy than that drawn on the 15th. From this time she mended rapidly. Her coma left her on the 20th, and her appetite returned; on the 21st, she made a large quantity of turbid dark coloured urine. On the 22d her pulse became again a little tense, for which she took a gentle puke. On the 23d she had a natural stool. On the 24th her pupils appeared to be contracted to their natural size, and on the 30th I had the pleasure of seeing her seated at a tea-table in good health. Her pulse, notwithstanding, was a little more active and tense than natural.

C A S E II.

On the 24th of the same month, I was called to visit the son of John Cypher in South Street, aged four years, who had been hurt about a month before, by a wound on his forehead with a brick bat, the mark of which still appeared. He had been ill for near two weeks with coma, headache, colic, vomiting, and frequent startings in his sleep. His evacuations by stool and urine were suppressed; he had discharged three worms, and had had two convulsion fits just before I saw him. The pupil of the right eye was larger than that of the left. His pulse was full, tense, and slow, and intermitted after every *fourth* stroke.

The

The symptoms plainly indicated an internal dropsy of the brain. I ordered him to lose four or five ounces of blood. Only three ounces of blood were drawn, which produced a small change in his pulse. It rendered the intermission of a pulsation perceptible only after every tenth stroke. On the 25th he lost five ounces of blood, and took a purge of calomel and jalap. On the 26th he was better. On the 27th, the vomiting was troublesome, and his pulse was still full and tense, but regular. I ordered him to lose four ounces of blood. On the 28th, his puking and head-ach continued,—his pulse was a little tense, but regular,—and his right pupil less dilated. On the 29th, his head-ach and puking ceased—and he played about the room. On the 4th of December he grew worse—his head-ach and puking returned, with a hard pulse, for which I ordered him to lose five ounces of blood. On the 5th he was better, but on the 6th his head-ach and puking returned. On the 7th I ordered his forehead to be bathed frequently with vinegar, in which ice had been dissolved. On the 8th he was much better. On the 9th his pulse became soft, and he complained but little of head-ach. After appearing to be well for near three weeks, except that he complained of a little head-ach, on the 29th his pulse became again full and tense,

tense, for which I ordered him to lose six ounces of blood, which for the first time discovered a buffy coat. After this last bleeding, he discharged a large quantity of water. From this time he recovered slowly, but his pulse was a little fuller than natural on the 19th of January following. He is now alive, and in good health.

C A S E S III. AND IV.

In the month of March 1792, I attended two children of three years of age, the one the daughter of William King, the other the daughter of William Blake: each of whom had most of the symptoms of the inflammatory stage of the internal dropsy of the brain. I prescribed the loss of four ounces of blood, and a smart purge in both cases, and in the course of a few days had the pleasure of observing all the symptoms of the disease perfectly subdued in each of them.

C A S E V.

In the months of July and August 1792, I attended a female slave of Mrs. Oneal of St. Croix, who had an obstinate head-ach, coma, vomiting, and a tense, full, and *slow* pulse. I believed it to be the phrenicula, or internal dropsy of the brain, in

in its inflammatory stage. I bled her five times in the course of two months, and each time with obvious relief of all the symptoms of the disorder. Finding that her head-ach, and a disposition to vomit, continued after the tension of her pulse was nearly reduced, I gave her as much calomel as excited a gentle salivation, which in a few weeks completed her cure.

C A S E VI.

The daughter of Robert Moffat, aged eight years, in consequence of the suppression of an habitual discharge from sores on her head, in the month of April 1793, was affected by violent head-ach, puking, great pains and weakness in her limbs, and a full, tense, and *slow* pulse. I believed these symptoms to be produced by an inflammation of the brain. I ordered her to lose six or seven ounces of blood, and gave her two purges of jalap and calomel, which operated very plentifully. I afterwards applied a blister to her neck. In one week from the time of my first visit to her she appeared to be in perfect health.

C A S E VII.

A young woman of eighteen years of age, a hired servant in the family of Mrs. Elizabeth Smith,

Smith, had been subject to a head-ach every spring for several years. The unusually warm days which occurred in the beginning of April 1793, produced a return of this periodical pain. On the eighth of the month, it was so severe as to confine her to her bed. I was called to visit her on the 9th. I found her comatose, and when awake, delirious. Her pupils were unusually dilated, and insensible to the light. She was constantly sick at her stomach, and vomited frequently. Her bowels were obstinately costive, and her pulse was full, tense, and so slow as seldom to exceed, for several days, from 56 to 60 strokes in a minute. I ordered her to lose ten ounces of blood every day for three days successively, and gave her, on each of those days, strong doses of jalap and aloes. The last blood which was drawn from her was fizy. The purges procured from three to ten discharges every day from her bowels. On the 12th, she appeared to be much better. Her pulse was less tense, and beat 80 strokes in a minute. On the 14th, she had a fainting fit. On the 15th, she sat up, and called for food. The pupils of her eyes now recovered their sensibility to light, as well as their natural size. Her head-ach left her, and on the 17th, she appeared to be in good health. Her pulse, however, continued to beat between but 50 and 60 strokes in a minute, and retained

retained a small portion of irregular action for several days after she recovered.

I am the more disposed to pronounce the cases which have been described to have been internal dropfy of the brain, from my having never been deceived in a single case in which I have examined the brains of patients whom I have suspected to have died of it.

I believe, with Dr. Quin, that this disorder is much more frequent than is commonly supposed. I can recollect many cases of anomalous fever and head-ach in children, which have excited the most distressing apprehensions of an approaching internal dropfy of the brain, but which have yielded in a few days to bleeding, or to purges and blisters. I think it probable, that some, or perhaps most of these cases, might have terminated in an effusion of water in the brain, had they been left to themselves, or not been treated with the above remedies. I believe further, that it is often prevented by all those physicians who treat the first stage of febrile diseases in children with evacuations, just as the pulmonary consumption is prevented by bleeding, and low diet, in an inflammatory catarrh.

I am

I am sorry, however, to add in this place, that I have failed in five cases, in which I used the remedy of blood-letting in the phrenicula, or in the inflammatory stage of this disorder ; perhaps it was not used so copiously as the disease required. If the relation of this disorder to pneumonicula be the same in its cure, that I have supposed it to be in its cause, then I am persuaded, that the same excess in blood-letting is indicated in it, above what is necessary in phrenitis, that has been practised in pneumonicula, above what is necessary in the cure of an acute inflammation of the lungs. The continuance, and in some instances, the increase of the appetite in the internal dropsy of the brain, would seem to favour this opinion no less in this disorder, than in the inflammatory state of pulmonary consumption. Where the internal dropsy is obviously the effect of a fall, or of any other cause which acts *directly* on the brain, there can be no doubt of the safety of very plentiful bleeding ; all practical writers upon surgery concur in advising it. Dr. Pennington has favoured me with an extract from Mr. Cline's manuscript lectures upon anatomy, delivered in London in the winter of 1792, which places the advantage of blood-letting, in that species of inflammation which follows a local injury of the brain, in a very strong point of light. “ I know (says he) that several practition-

“ ers object to the use of evacuations as remedies
“ for concussions of the brain, because of the
“ weakness of the pulse; but in these cases the
“ pulse is *depressed*. Besides, experience shews,
“ that evacuations are frequently attended with
“ very great advantages. I remember a remark-
“ able case of a man in this [St. Thomas's] hos-
“ pital, who was under the care of Mr. Baker.
“ He lay in a comatose state for three weeks after
“ an injury of the head. During that time, he
“ was bled *twenty* times, that is to say, he was
“ bled once every day upon an average. He was
“ bled twice a day *plentifully*, but towards the con-
“ clusion, he was bled more sparingly, and only
“ every other day; but at each bleeding, there
“ were taken, upon an average, about sixteen
“ ounces of blood. In consequence of this treat-
“ ment, the man perfectly recovered his health
“ and reason.” *

II. A second remedy to be used in the first stage
of this disorder, is PURGES. I have constantly ob-

* Since the publication of the first edition of this volume, I have used bleeding in this disorder in a more copious manner than formerly, and with the same success in which that remedy is used in other more common inflammatory states of fever, attended with local determination.

served all the patients whose cases have been related, to be relieved by plentiful and repeated evacuations from the bowels. I was led to the use of frequent purges, by having long observed their good effects in palseies, and other cases of congestion in the brain, where blood-letting was unsafe, and where it had been used without benefit. In the Leipsic Commentaries, * there is an account of a case of internal dropsey of the brain, which followed the measles, being cured by no other medicines than purges and diuretics. I can say nothing in favour of the latter remedy, in this disorder, from my own experience. The digitalis purpurea has been used in this city by several respectable practitioners, but, I believe, in no instance with any advantage.

III. BLISTERS have been uniformly recommended by all practical writers upon this disease. I have applied them to the head, neck, and temples, and generally with obvious relief to the pain in the head. They should be omitted in no stage of the disorder; for even in the inflammatory stage, the discharge they occasion from the vessels of the head, greatly overbalances their stimulating effects upon the whole system.

* Vol. xxix. p. 139.

IV. MERCURY was long considered as the only remedy, which gave the least chance of a recovery from this formidable disorder. Out of all the cases in which I gave it, before the year 1790, I succeeded in but two—one of them was a child of three years old, the other was a young woman of 26 years of age. I am the more satisfied that the latter case was internal dropfy of the brain, from my patient having relapsed, and died between two and three years afterwards, of the same disorder. Perhaps my repeated failures in the use of this remedy, were occasioned by my giving it before the inflammatory action of the system was sufficiently subdued, by previous evacuations. The same rule should probably be observed in giving it in this disorder, which is practised in administering it in effusions of water in other parts of the body, and in all other diseases of diminished action in the system: In none of the cases, except the 5th, in which I used bleeding and purging with success, did I prescribe calomel with any other view than to increase the evacuation from the bowels.

V. LINEN CLOTHS wetted with cold vinegar or water, and applied to the forehead, contribute very much to relieve the pain in the head. In

the case of Mr. Cypher's son, * the solution of ice in the vinegar appeared to afford the most obvious relief of this distressing symptom.

A puncture in the brain has been proposed by some writers to discharge the water from its ventricles. If the theory I have delivered be true, the operation promises nothing, even though it could always be performed with perfect safety. In cases of local injuries, or of inflammation from any cause, it must necessarily increase the disorder ; and in cases of effusion only, the debilitated state of the whole system forbids us to hope for any relief from such a local remedy.

Bark, wine, and opium promise much more success in the last stage of the disorder. I can say nothing in their favour from my own experience ; but from the aid they afford to mercury in other diseases, I conceive they might be made to accompany it with advantage.

Considering the nature of the indirect causes which induce the disease, and the case of a relapse, which has been mentioned, after an interval

* Case II.

of near three years, as well as the symptoms of slow convalescence, manifested by the pulse, which occurred in the first and seventh cases, I submit it to the consideration of physicians, whether the use of moderate exercise, and the cold bath, should not be recommended to prevent a return of the disorder in every case where it has yielded to the power of medicine.

AN

A C C O U N T

OF THE

M E A S L E S,

AS THEY APPEARED IN

PHILADELPHIA,

IN THE SPRING OF 1789.

AN
A C C O U N T
OF THE
MEASLES, &c.

THE weather in December 1788, and in January 1789, was variable, but seldom very cold. On the first of February 1789, at 6 o'clock in the morning, the mercury in Fahrenheit's thermometer fell five degrees below 0 in the city of Philadelphia. At twenty miles from the city, on the Schuylkill, it fell 12° below 0, at the same hour. On the 19th and 20th of this month, there fell a quantity of snow, the depth of which, upon an average, was supposed to be about eight or ten inches. On the 23d, 24th, 25th, and 27th,

the

the weather was very cold. The mercury fluctuated during these days between 4 and 10° above 0.

In the intervals between these cold days, the weather frequently moderated, so that the Delaware was frozen and thawed not less than four times. It was not navigable till the eighth of March. There were in all, during the winter and month of March, sixteen distinct falls of snow.

In April and May there were a few warm days; but upon the whole, it was a very cold and backward spring. The peaches failed almost universally. There were no strawberries or cherries on the 24th of May, and every other vegetable product was equally backward. A country woman of 84 years of age, informed me, that it was the coldest spring she had ever known. It was uncomfortable to sit without fire till the first of June.

The measles appeared first in the Northern Liberties, in December. They spread slowly in January, and were not universal in the city till February and March.

This disease, like many others, had its *precursor*. It was either a gum-boil, or a sore on the tongue. They

They were both very common, but not universal. They occurred, in some instances, several days before the fever, but in general they made their appearance during the eruptive fever, and were a sure mark of the approaching eruption of the measles. I was first led to observe this fact, from having read Dr. Quin's accurate account of the measles in Jamaica. I shall now proceed to mention the symptoms of the measles as they appeared in the different parts of the body.

1. In the HEAD, they produced great pain, swelling of the eye-lids, so as to obstruct the eye-sight, tooth-ach, bleeding at the nose, tinnitus aurium, and deafness; also coma for two days, and convulsions. I saw the last symptom only in one instance. It was brought on by a stoppage of a running from the ear.

2. In the THROAT and LUNGS, they produced a soreness and hoarseness, acute or dull pains in the breast and sides, and a painful or distressing cough. In one case, this cough continued for two hours without any intermission, attended by copious expectoration. In two cases, I saw a constant involuntary discharge of phlegm and mucus from the mouth, without any cough. One of them terminated fatally. Spitting of blood occurred in several

several instances. The symptoms of pneumonia vera notha and typhoides were very common. I saw two fatal cases from pneumonia notha, in both of which, the patients died with the trunk of the body in an erect posture. I met with two cases in which there was no cough till the eruption made its appearance on the fourth day, and one which was accompanied by all the usual symptoms of the cynanche trachealis humoralis.

3. In the STOMACH the measles produced, in many instances, sickness and vomiting. And,

4. In the BOWELS, griping, diarrhœa, and in some instances, bloody stools. The diarrhœa occurred in every stage of the disorder, but it was bloody and most painful in its decline. I attended a black girl who discharged a great many worms, but without the least relief of any of her symptoms.

There was a great variety in this disease—1st, In the *time* of the attack of the fever, from the *time* of the reception of the contagion. In general the interval was fourteen days, but it frequently appeared before and sometimes later than that period.

2nd. In

2nd. In the time of the eruption, from the beginning of the fever. It generally appeared on the third and fourth days. In one case, Dr. Watters informed me, it did not appear till the eighth day.

3d. In the abatement or continuance of the fever after the eruption.

4th. In the colour and figure of the eruption. In some it put on a *pale* red, in others a *deep*, and in a few a *livid* colour, resembling an incipient mortification. In some there appeared red blotches, in others an equally diffused redness, and in a few, eruptions like the small pox, called by Dr. Cullen, *rubiola varioloides*.

5. In the duration of the eruption on the skin. It remained in most cases only three or four days; but in one, which came under my care, it remained nine days.

6. In the manner of its retrocession. I saw very few cases of its leaving the branny appearance so generally spoken of by authors on the skin.

7. In not affecting many persons, and even families who were exposed to it.

The

The symptoms which continued in many after the retrocession of the measles, were cough,—hoarseness,—or complete aphonia, which continued in two cases for two weeks; also diarrhoea, opthalmia, a bad taste in the mouth, a defect or excess of appetite, and a fever, which in some instances was of the intermitting kind, but which in more assumed the more dangerous form of the typhus mitior. I attended two cases of internal dropsy of the brain soon after it. One was evidently excited by a fall. They both ended fatally.

During the prevalence of the disease, I observed several persons (who had had the measles, and who were closely confined to the rooms of persons ill with them) to be affected with a slight cough, sore throat, and even sores in the mouth. I find a similar fact taken notice of by Dr. Quier.

But I observed further, many children to be affected by a fever, cough, and all the other symptoms of the measles which have been mentioned, except a general eruption, for, in some, there was a trifling efflorescence about the neck and breast. I observed the same thing in 1773 and 1783. In my note book, I find the following account of the appearance of this disease in children in the year 1773. “The measles appeared in March, a ca-

—tarh

“ tarrh (for by that name I then called it) appeared at the same time, and was often mistaken for them, the symptoms being nearly the same in both. In the catarrh there was in some instances a trifling eruption. A lax often attended it, and some who had it, had an extremely sore mouth.”

I was the more struck with this disease, from finding it was taken notice of by Dr. Sydenham. He calls it a morbillous fever. I likewise find an account of it in the 2d article of the 5th volume of the Edinburgh Medical Essays. The words of the author who is anonymous, are as follow. “ During this measley season, several persons, who never had the measles, had all the symptoms of measles, which went off in a few days without any eruptions. The same persons had the measles months or years afterwards.” Is this disease a common fever, marked by the reigning epidemic, and produced in the same manner, and by the same causes, as the variolous fever described by Dr. Sydenham, which he says prevailed at the same time with the small pox ? I think it is not. My reasons for this opinion are as follow.

1. I never saw it affect any but children, in the degree that has been mentioned, and such only as had never had the measles.

2. It

2. It affected whole families at the same time; It proved fatal to one of three children whom it affected on the same day.

3. It terminated in a pulmonary consumption in a boy of ten years old, with all the symptoms which attend that disease when it follows the regular measles.

4. It affected a child in one family on the same day that two other members of the same family were affected by the genuine measles.

5. It appeared on the usual days of the genuine measles, from the time the persons affected by it were exposed to its contagion. And,

6. It communicated the disease in one family, in the usual time in which the disease is taken from the genuine measles.

The measles then appear to follow the analogy of the small pox, which affects so superficially as to be taken a second time, and which produce on persons who have had them what are called the nurse pock. They follow likewise the analogy of another disease, viz. the scarlatina anginosa. In the account of the epidemic for 1773, published in the third volume of the Edinburgh Medical Essays, we are

told, that such patients as had previously had the scarlet fever without sore throats, took the sore throat, and had no eruption, while those who had previously had the sore throat had a scarlet eruption, but the throat remained free from the distemper. All other persons who were affected had both.

From these facts, I have taken the liberty of calling it the *Internal Measles*, to distinguish it from those which are *external*. I think the discovery of this new state of this disorder of some application to practice.

1. It will lead us to be cautious in declaring any disease to be the external measles in which there is not a general eruption. From my ignorance of this, I have been led to commit several mistakes which were dishonourable to the profession. I was called during the prevalence of the measles in the above-named season, to visit a girl of twelve years old, with an eruption on the skin. I called it the measles. The mother told me, it was impossible, for that I had in 1783 attended her for the same disorder. I suspect the anonymous author before-mentioned has fallen into the same error. He adds to the account before quoted the following words. “Others who had undergone the measles formerly, had at *this time*, a fever of the

“ erysipelatous kind, with eruptions like to which
“ nettles cause, and all the *previous* and *concomi-*
“ *tant* symptoms of the measles from the begin-
“ ning to the end of the disease.”

2. If inoculation, or any other mode of lessening the violence of the disease should be adopted, it will be of consequence to know what persons are secure from the attacks of it, and who are still exposed to it.

I shall now add a short account of my method of treating this disorder.

Many hundred families came through the disease without the help of a physician. But in many cases it was attended with peculiar danger, and in some with death. I think it was much more fatal than in the years 1773 and 1783, probably owing to the variable weather in the winter, and the coldness and dampness of the succeeding spring. Dr. Huxham says, he once saw the measles attended with peculiar mortality, during a late cold and damp spring in England. It was much more fatal (*cæteris paribus*) to adults than to young people.

The remedies I used were,

I. BLEEDING,

1. BLEEDING, in all cases where great pain and cough with a hard pulse attended. In some I found it necessary to repeat this remedy. But I met with many cases in which it was forbidden by the weakness of the pulse, and by other marks of a feeble action in the blood-vessels.

2. VOMITS. These were very useful in removing a nausea ; they likewise favoured the eruption of the measles.

3. DEMULCENT and DILUTING drinks. These were barley water, bran, and flaxseed tea, dried cherry and raw apple water, also beverage, and cyder and water. The last drink I found to be the most agreeable to my patients of any that have been mentioned.

4. BLISTERS to the neck, sides, and extremities, according to the symptoms. They were useful in every stage of the disorder.

5. OPIATES. These were given not only at night, but in small doses during the day, when a troublesome cough or diarrhoea attended.

6. Where a catarrhal fever ensued, I used bleeding and blisters. In those cases in which this

fever terminated in an intermittent, or in a typhus, I gave the bark with evident advantage. In that case of measles, formerly mentioned, which was accompanied by symptoms of cynanche trachealis humoralis, I gave calomel with the happiest effects. In the admission of *fresh air* I observed a medium as to its temperature, and accommodated it to the degrees of action in the system. In different parts of the country, in Pennsylvania and New-Jersey, I heard with great pleasure of the *cold air* being used as freely and as successfully in this disorder as in the inflammatory small-pox. The same people who were so much benefited by *cool air*, I was informed, drank plentifully of cold water during every stage of the disorder. One thing in favour of this country practice deserves to be mentioned, and that is, evident advantage arose in all the cases which I attended, from patients leaving their beds in the febrile state of this disease. But this was practised only by those in whom inflammatory diathesis prevailed, for these alone had strength enough to bear it.

The convalescent state of this disease required particular attention.

1. A DIARRHOEA often continued to be troublesome after other symptoms had abated. I relieved it by opiates and demulcent drinks. Bleeding has been

been recommended for it, but I did not find it necessary in a single case.

2. AN OPTHALMIA which sometimes attended, yielded to astringent collyria and blisters.

3. Where a cough or fever followed so slight as not to require bleeding, I advised a milk and vegetable diet, country air, and moderate warmth; for whatever might have been the relation of the lungs in the beginning of the disease to cold air, they were now evidently too much debilitated to bear it.

4. It is a common practice to prescribe purges after the measles. After the asthenic state of this disorder they certainly do harm. In all cases, the effects of them may be better obviated by diet, full or low, suitable clothing, and gentle exercise, or country air. I omitted them in several cases, and no eruption or disease of any kind followed their disuse.

I shall only add to this account of the measles, that in several families, I saw evident advantages from preparing the body for the reception of the contagion, by means of a vegetable diet.

AN
ACCOUNT
OF THE
INFLUENZA,
AS IT APPEARED IN
PHILADELPHIA,

In the Autumn of 1789—In the Spring of 1790—and in
the Winter of 1791.

A N

A C C O U N T

OF THE

INFLUENZA, &c.

THE latter end of the month of August in the summer of 1789, was so very cool that fires became agreeable. The month of September was cool, dry, and pleasant. During the whole of this month, and for some days before it began, and after it ended, there had been no rain. In the beginning of October, a number of the members of the first Congress, that had assembled in New-York, under the present national government, arrived in Philadelphia, much indisposed with colds. They ascribed them to the fatigue and night air to which they

they had been exposed in travelling in the public stages ; but from the number of persons who were affected, from the uniformity of their complaints, and from the rapidity with which it was propagated through our city, it soon became evident that it was the disease so well known of late years, by the name of the Influenza.

The symptoms which ushered in the disease, were generally a hoarseness, a sore-throat, a sense of weariness, chills, and a fever. After the disease was formed, it affected more or less the following parts of the body. Many complained of acute pains in the HEAD. These pains were frequently fixed between the eye-balls, and in three cases which came under my notice, they were terminated by abscesses in the frontal sinus, which discharged themselves through the nose. The pain, in one of these cases, before the rupture of the abscesses, was so exquisite, that my patient informed me, that he felt as if he should lose his reason. Many complained of a great itching in the EYE-LIDS. In some, the eye-lids were swelled. In others, a copious effusion of water took place from the EYES ; and in a few, there was a true ophthalmia. Many complained of great pains in one EAR, and some of pains in both EARS. In some these pains terminated in abscesses, which discharged for some days

days a bloody or purulent matter. In others, there was a swelling behind each ear without a suppuration. SNEEZING was an universal symptom. In some it occurred not less than fifty times in a day. The matter discharged from the nose was so acrid as to inflame the nostrils and the upper lip, in such a manner as to bring on swellings, sores, and scabs in many people. In some, the nose discharged drops, and in a few, streams of blood, to the amount, in one case, of twenty ounces. In many cases, it was so much obstructed, as to render breathing through it difficult. In some there was a total defect of TASTE. In others there was a bad taste in the mouth, which frequently continued through the whole course of the disease. In some there was a want of APPETITE. In others it was perfectly natural. Some complained of a soreness in their mouths, as if they had been inflamed by holding pepper in them. Some had SWELLED JAWS, and many complained of the TOOTH-ACH. I saw only one case in which the disease produced a COMA.

Many were affected with pains in the BREAST and SIDES. A difficulty of breathing attended in some, and a COUGH was universal. Sometimes this cough alternated with a pain in the head. Sometimes it preceded this pain, and sometimes it followed

followed it. It was at all times distressing. In some instances it resembled the chin-cough. One person expired in a fit of coughing, and many persons spat blood in consequence of its violence. I saw several patients in whom the disease affected the trachea chiefly, producing great difficulty of breathing, and, in one case, a suppression of the voice, and I heard of one case in which the disease, by falling on the trachea, produced a cynanche trachealis. In most of the cases which terminated fatally, the patients died of pneumonia notha.

The STOMACH was sometimes affected by nausea and vomiting ; but this was far from being an universal symptom.

I met with four cases in which the whole force of the disease fell upon the BOWELS and went off in a diarrhoea ; but in general the bowels were regular or costive.

The LIMBS were affected with such acute pains as to be mistaken for the rheumatism, or for the break-bone-fever of 1780. The pains were most acute in the back and thighs.

PROFUSE SWEATS appeared in many over the whole body in the beginning, but without affording

ing any relief. It was in some instances accompanied by erysipelatous, and in four cases which came to my knowledge, it was followed by miliary eruptions.

The PULSE was sometimes tense and quick, but seldom full. In a great majority of those whom I visited it was quick, weak, and soft.

There was no appearance in the urine different from what is common in all fevers.

The disease had evident remissions, and the fever seldom continued above three or four days; but the cough, and some other troublesome symptoms, sometimes continued two or three weeks.

In a few persons, the fever terminated in a tedious and dangerous typhus.

In several pregnant women it produced uterine hæmorrhages and abortions. *

* It is remarkable that abortions are produced chiefly by contagious fevers, such as the plague, the small-pox, and the measles, while inflammatory and bilious fevers, and even the dysentery, which frequently agitate the female system more violently, seldom induce those effects.

It affected adults of both sexes alike. A few old people escaped it. It passed by children under eight years old with a few exceptions. Out of five-and-thirty maniacs in the Pennsylvania hospital, but three were affected by it. No profession or occupation escaped it. The smell of tar and tobacco did not preserve the persons who worked in them from the contagion—nor did the use of tobacco, in snuff, smoking, or chewing, afford a security against it.*

Even previous and existing diseases did not protect patients from it. It insinuated into sick chambers, and blended itself with every species of chronic complaint.

It was remarkable that persons who worked in the open air, such as sailors, and 'long-shore-men, (to use a mercantile epithet) had it much worse than tradesmen who worked within doors. A body of surveyors in the eastern woods of Pennsylvania, who caught it all at once from one of their attendants, suffered extremely from it. Even

* Mr. Howard informs us that the use of tobacco is not a preservative against the plague as has formerly been supposed; of course that apology for the use of an offensive weed should not be admitted.

the vigour of constitution, which is imparted by the savage life, did not mitigate its violence. Mr. Andrew Ellicott, the geographer of the United States, informed me that he was a witness of its affecting the Indians in the neighbourhood of Niagara with peculiar force. The cough which attended this disorder was so new and so irritating a complaint among them, that they ascribed it to witchcraft.

It proved most fatal on the sea-shore of the United States.

Many people who had recovered, were affected a second time with all the symptoms of the disorder. I should have ascribed this second attack to the sensible qualities of the atmosphere, had I not observed it to affect those persons chiefly who had occasionally changed their place of residence during the prevalence of the disorder. I met with a woman, who, after recovering from it in Philadelphia, took it a second time in New York, and a third time upon her return to Philadelphia.

Many thousand people had the disorder who were not confined to their houses, but transacted business as usual out of doors.—A perpetual coughing was heard in every street of the city.—

Buying

Buying and selling were rendered tedious by the coughing of the farmer and the citizen who met in market places. It even rendered divine service scarcely intelligible in the churches.

A few persons who were exposed to the contagion escaped it, and some had it so lightly as scarcely to be sensible of it. Of the persons who were confined to their houses, not a fourth part of them kept their beds.

It proved fatal (with few exceptions) only to old people, and to persons who had been previously debilitated by consumptive complaints. It likewise carried off several hard drinkers. It terminated in asthma in three persons whose cases came under my notice, and in pulmonary consumption, in many more. I met with an instance in a lady, who was much relieved of a chronic complaint in her liver; and I heard of another instance of a clergyman whose general health was much improved by a severe attack of this disorder.

The contagion was not wholly confined to the human species. It affected two cats, two house-dogs, and one horse, within the sphere of my observations. One of the dogs disturbed his mistress so much by coughing at night, that she gave him

ten drops of laudanum for several nights, which perfectly composed him. One of the cats had a vomiting with her cough. The horse breathed as if he had been affected by the cynanche trachealis.

The scarlatina anginosa, which prevailed during the summer, disappeared after the first of October ; but appeared again after the influenza left the city. Nor was the remitting fever seen during the prevalence of the reigning epidemic.

I inoculated about twenty children for the small-pox during this prevalence of the influenza, and never saw that disease exhibit a more favourable appearance.

In the treatment of the influenza I was governed by the state of the system. Where inflammatory diathesis discovered itself by a full or tense pulse, or where great difficulty of breathing occurred, and the pulse was low and weak in the beginning of the disorder, I ordered moderate bleeding. In a few cases in which the symptoms of pneumonia attended, I bled a second time with advantage. In all these instances of inflammatory affection I gave the usual antiphlogistic medicines. I found that vomits did not terminate the disorder,

as they often do a common catarrh, in the course of a day, or of a few hours.

In cases where no inflammatory action appeared in the system, I prescribed cordial drinks and diet, and forbade every kind of evacuation. I saw several instances of persons who had languished for a week or two with the disorder, who were suddenly cured by eating a hearty meal, or by drinking half a pint of wine, or a pint of warm punch. In all these cases of weak action in the blood-vessels, liquid laudanum gave great relief, not only by suspending the cough, but by easing the pains in the bones.

I met with a case of an old lady who was suddenly and perfectly cured of her cough by a fright.

The duration of the disorder in our city was about six weeks—It spread from New-York and Philadelphia in all directions, and in the course of a few months pervaded every state in the union. It was carried from the United States to several of the West India islands. It prevailed in the island of Grenada in the month of November 1789, and it was heard of in the course of the ensuing winter in the Spanish settlements in South America.

The

The following winter was unusually mild, inasmuch that the navigation of the Delaware was not interrupted during the whole season, only from the 7th to the 24th of February. The weather on the 3d and 4th days of March was very cold, and on the 8th and 9th days of the same month, the mercury in Fahrenheit's thermometer stood at 4° at 7 o'clock in the morning. On the 10th and 11th, there fell a deep snow. The weather during the remaining part of the month was cold, rainy, and variable. It continued to be variable during the month of April. About the middle of the month there fell an unusual quantity of rain. The showers which fell on the night of the 17th, will long be connected in the memories of the citizens of Philadelphia with the time of the death of the celebrated Dr. Franklin. Several pleurisies appeared during this month; also a few cases of measles. In the last week of the month, the influenza made its appearance. It was brought to the city from New England, and affected, in its course, all the intermediate states. Its symptoms were nearly the same as they were in the preceding autumn, but in many people it put on some new appearances. Several persons who were affected by it, had symptoms of madness, one of whom destroyed himself by jumping out of a window. Some had no cough, but very acute pains in

the back and head. It was remarked that those who had the disease chiefly in the breast the last year, complained now chiefly of their heads, while those whose heads were affected formerly, now complained chiefly of their breasts. In many, it put on the type of an intermitting fever. Several complained of constant chills, or constant sweats; and some were much alarmed by an uncommon blue and dark colour in their hands. I saw one case of ischuria, another of an acute pain in the rectum, a third of anasarca, and a fourth of a palsy in the tongue and arms; all of which appeared to be anomalous symptoms of the influenza. Sneezing, and pains in the ears and frontal sinus, were less common now than they were in the fall; but a pain in the eye-balls was an universal symptom. Some had a pain in the one eye only, and a few had sore eyes, and swellings in the face. Many women who had it, were affected by an irregular appearance of the catamenia. In two persons whom I saw, the cough was incessant for three days, nor could it be composed by any other remedy than plentiful bleeding. A patient of Dr. Samuel Duffield informed me, after his recovery, that he had had no other symptom of the disease than an efflorescence on his skin, and a large swelling in his groin, which terminated in a tedious abscess.

The

The prisoners in the gaol who had it in the autumn, escaped it this spring.

During the prevalence of this disorder, I saw no sign of any other epidemic.

It declined sensibly about the first week in June, and after the 12th day of this month, I was not called to a single patient in this disorder.

The remedies for it were the same as were used in the fall.

I used bleeding in several cases on the second, third, and fourth days of the disorder, where it had appeared to be improper in its first stage. The cases which required bleeding were far from being general. I saw two instances of syncope of an alarming nature, after the loss of ten ounces of blood; and I heard of one instance of a boy who died in half an hour after this evacuation.

I remarked that purges of all kinds worked more violently than usual in this disorder.

The convalescence from it was very slow, and a general languor appeared to pervade the citizens for several weeks after it left the city.

The month of December 1790 was extremely and uniformly cold. In the beginning of the month of January 1791, the weather moderated, and continued to be pleasant till the 17th, on which day the navigation of the Delaware, which had been completely obstructed by the ice, was opened so as to admit of the arrival of several vessels. During the month of December many people complained of *colds*; but they were ascribed wholly to the weather. In January four or five persons in a family were affected by colds at the same time; which created a suspicion of a return of the influenza. This suspicion was soon confirmed by accounts of its prevailing in the neighbouring counties of Chester and Montgomery in Pennsylvania, and in the distant states of Virginia and Rhode-Island. It did not affect near so generally as in the two former times of appearance. There was no difference in the method of treating it. While the common inflammatory diseases of the winter, bore the lancet as usual, it was remarked that patients who were attacked by the influenza, did not bear bleeding in a greater proportion, or in a larger quantity than in the two former times of its appearance in the city,

I shall conclude this account of the Influenza by the following observations :

I. It

1. It is as certainly a contagious disease as the measles or small-pox, and exists independently of the sensible qualities of the air. This is proved by its prevailing in every state of the weather, and in successive periods in neighbourhoods, which have been exposed in the same instant to the same atmosphere; also by whole families, and the tenants of gaols and hospitals frequently escaping it. It is not peculiar to the influenza not to be affected by the different states of the weather. Dr. Patrick Russel has proved, that the contagion of the plague is equally independent of the influence of the atmosphere.

2. The influenza passes with the utmost rapidity through a country, and affects the greatest number of people, in a given time, of any contagious disease in the world.

3. It appears from the histories of it which are upon record, that neither climate, nor the different states of society, have produced any *material* change in the disorder. This will appear from comparing the account I have given, with the histories of it which have lately been given by Dr. Grey, Dr. Hamilton, Dr. A. Fothergill, Mr. Chisholm, and other modern physicians. It appears further, that even time itself has not been

able materially to change the type of this disorder. This is evident, from comparing modern accounts of it with those which have been handed down to us by ancient physicians.

I have hinted in a former essay at the *diminutives* of certain diseases. There is a state of Influenza, which is less violent and more local, than that which has been described. It generally prevails in the winter season. It seems to originate from a morbid matter, generated in crowded and heated churches, and other assemblies of the people. I have seen a cold, or influenza, frequently universal in Philadelphia, which I have distinctly traced to this source. It would seem as if the same species of diseases resembled pictures, and that while some of them partook of the deep and vivid nature of mosaic work, others appeared like the feeble and transient impressions of water colours.

AN
I N Q U I R Y
INTO THE
CAUSES OF THE INCREASE
OF
Bilious and Intermittent Fevers
IN
PENNSYLVANIA,

Read in the AMERICAN PHILOSOPHICAL SOCIETY,
December 16, 1785.

I N Q U I R Y, &c.

IT has been remarked, that Pennsylvania for some years past, has become more sickly than formerly. Fevers, which a few years ago appeared chiefly on the banks of creeks and rivers, and in the neighbourhood of mill-ponds, now appear in parts remote from them all, and in the highest situations. This change with respect to the healthiness of our country, may be traced to the three following causes.

1. The establishment and increase of mill-ponds. There are whole counties in Pennsylvania in which intermittents were unknown, until the waters in them were dammed, for the purpose of erecting mill-ponds.

2. The

2. The cutting down of wood, under certain circumstances, tends to render a country sickly. It has been remarked, that intermittents on the shores of the Susquehannah, have kept an exact pace with the passages which have been opened for the propagation of marsh effluvia, by cutting down the wood which formerly grew in its neighbourhood. I remember the time, when intermittents were known only within half a mile, in some places, of that river. They are now to be met with ten miles from it, in the same parts of the state.

I beg a distinction to be made here between *clearing* and *cultivating* a country. While clearing a country makes it sickly, in the manner that has been mentioned, *cultivating* a country, that is, draining swamps, destroying weeds, burning brush, and exhaling the unwholesome and superfluous moisture of the earth, by means of frequent crops of grain, grasses, and vegetables of all kinds, render it healthy. I could mention, in support of these facts, several countries in the United States, which have passed through each of the stages that have been described. The first settlers received these countries from the hands of nature pure and healthy.*

A HISTORY OF THE
FEVERS

* A Physician who travelled through part of Bedford county, in Pennsylvania, in the year 1782, informed me that

Fevers soon followed their improvements, nor were they finally banished, until the higher degrees of cultivation that have been named took place. I confine myself to those countries only where the salutary effects of cultivation were not rendered abortive by the neighbourhood of mill-ponds.

A third cause of the late increase of bilious and intermitting fevers, must be sought for in the different and unequal quantities of rain which have fallen within these last seven years. While our creeks and rivers, from the uniformity of our seasons, were confined to steady bounds, there was little or no exhalation of febrile miasmata from their shores. But the dry summers of 1780, 1781, and 1782, by reducing our creeks and rivers far below their ancient marks; while the wet springs of 1784 and 1785, by swelling them both beyond

that he was witness of some country people having travelled twenty miles, to see whether it was possible for a German girl, who laboured under an intermittent, to be hot and cold at the same time. Even the swamps in the United States are healthy before they are cleared. In the Delaware State, labourers pass whole summers and autumns in making shingles in the cedar swamps, without being affected by fevers or sickness of any kind. Persons who spend the warm months in the cedar and pine swamps in North Carolina, are likewise equally free from diseases.

their

their natural heights, have, when they have fallen, as in the former case, left a large and extensive surface of moist ground exposed to the action of the sun, and of course to the generation and exhalation of febrile miasmata. The history of epidemics in foreign countries, favours this opinion of the cause of their increase in Pennsylvania. The inhabitants of Egypt are always healthy during the overflowing of the Nile. Their fevers appear only after the recess of the river. It is remarkable that a wet season is often healthy in low, while it is sickly in hilly countries. The reason is obvious. In the former the rains entirely cover all the moist grounds, while in the latter, they fall only in sufficient quantity to produce those degrees of moisture which favour febrile exhalations. The rains which fall in the summer are rendered harmless only by covering the *whole* surface of marshy ground. The rains which fall in our state after the middle of September, are so far from producing fevers, that they generally prevent them. The extraordinary healthiness of the last autumn, I believe, was occasioned by nothing but the extraordinary quantity of rain that fell during the autumnal months. The rain probably acts at this season by diluting, and thus destroying, the febrile miasmata that were produced by the heat and moisture of the preceding summer. In support of

the

the truth of this third cause of the increase of fevers in Pennsylvania, I have only to add a fact lately communicated to me by Dr. Franklin. He informed me, that in his journey from Passey to Havre de Grace, last summer, he found the country through which he travelled, unusually sickly with fevers. These fevers, it was generally supposed, were produced by the extraordinary dry weather, of which the public papers have given us such melancholy and frequent accounts.

I come now to suggest a few hints for obviating and preventing fevers, and for rendering our country again healthy. For this purpose, I beg leave to recommend, in the first place, the planting of trees around all our mill ponds, (besides cleaning them occasionally) in order to prevent the diseases that have justly been ascribed to them. Let the trees be planted in the greatest number, and closest together, to leeward of the ordinary current of the summer and autumnal winds. I have known several instances of families being preserved from fevers by an accidental copse of wood standing between a mill-pond and a dwelling-house, and that in cases too where the house derived no advantage from an high situation. The trees *around* or *near* a mill-pond, act perhaps in a small degree *mechanically*. By sheltering the pond from

from the action of the sun, they lessen exhalation, as well as obstruct the passage of the vapours that are raised, to the adjacent parts. But they act likewise *chemically*. It has been demonstrated that trees absorb unhealthy air, and discharge it in a highly purified state in the form of what is now called “dephlogisticated” air. The willow tree, according to Mr. Ingenhausz, has been found to purify air the most rapidly of any tree that he has subjected to his experiments. The rapidity of its growth, its early verdure, and the late fall of its leaf, all seem to mark it likewise as a tree highly proper for this purpose.

A second method of preventing fevers, is to let the cultivation always keep pace with the *clearing* of our lands. Nature has in this instance, connected our duty, interest, and health together. Let every spot covered with moisture from which the wood has been cut, be carefully drained, and afterwards ploughed and sowed with grass seed; let weeds of all kinds be destroyed, and let the waters be so directed as to prevent their stagnating in any part of their course.

These are the two principal means of extirpating intermitting and bilious fevers from our country, but as these means are slow in their operation,

I shall subjoin a few directions for preventing fevers till the above remedies can take effect.

1. Whether the matter which produces fevers be of an organic nature, I do not pretend to determine, but it is certain, that *fire*, or the *smoke* or *heat* which issue from it, destroy the effects of marsh miasmata upon the human body; hence we find cities more healthy than country places, and the centre of cities more healthy than their suburbs in the sickly months. To derive the utmost possible benefit from this method of preventing sickness, I would advise large fires to be made every evening, of brush, between the spots from whence the exhalations are derived, and the dwelling house, and as near to the latter as is safe, and not disagreeable. This practice should be continued till the appearance of two or three frosts, for frosts, as well as heavy rains in the autumnal months, never fail to put a stop to the progress of intermit- tents.

During the sickly season, fires should be likewise kept in every room in the dwelling house, even in those cases where the heat of the weather makes it necessary to keep the doors and windows open.

2. Let me advise my countrymen in sickly situations, to prefer woollen and cotton to linen clothes in the summer and autumnal months. The most sickly parts of the island of Jamaica have been rendered more healthy, since the inhabitants have adopted the use of woollen and cotton garments instead of linen.

During the late war, I knew many officers, both in the British and American armies, who escaped fevers in the most sickly places, by wearing woollen shirts or waistcoats constantly next to their skins. I have heard the present diminution of the human body in strength and size, compared with its ancient vigour and form, ascribed in part to the introduction of linen garments. I am not disposed to controvert this opinion, but I am sure of the efficacy of woollen clothes in wet and cold climates in preventing fevers of all kinds. The parliament of Great Britain compels every body that dies within the island to be buried in a woollen shirt or winding sheet. The law would be much wiser if it compelled every body to wear woollen garments next to their skins during life, and linen after death.

3. The diet in the sickly months where the fevers are not of a malignant nature, should be generous.

tierous. Wine and beer should be the drinks of this season instead of spirits and water. I do not think that fruit and vegetables of any kind produce fevers, but as the season of the year produces languor and weakness, a larger quantity of animal food than usual is best calculated to oppose them. Salted meat, for this reason, is preferable to fresh meat. Food of all kinds eaten during the sickly months, should be well seasoned.

4. The evening air should be avoided as much as possible: Even the morning air before the sun rises, should not be breathed, until the body has been fortified with a little solid aliment, or a *draught* of bitters. These bitters should be made of centaury wormwood, camomile, or the bark of the willow or dogwood trees infused in *water*. Bitters made with spirits, or even wine, cannot be taken in a sufficient quantity to do service without producing intoxication, or the deadly habit of loving and drinking spirituous liquors.

5. Too much cannot be said in favour of cleanliness, as means of preventing fevers. The body should be bathed or washed frequently. It has been proved in the highlands of Jamaica, that adding salt to water, renders it more powerful in preventing diseases when applied to the body. Equal

S 2 pains

pains should be taken to promote cleanliness in every species of apparel. Offal matters, especially those which are of a vegetable nature, should be removed from the neighbourhood of a dwelling house. The dung of domestic animals, during its progress towards manure, may be excepted from this direction. Nature, which made man and these animals equally necessary to each other's subsistence, has kindly prevented any inconvenience from their living together. On the contrary, to repay the husbandman for affording a shelter to these useful and helpless animals, nature has done more. She has endowed their dung with a power of destroying the effects of marsh exhalations, and of preventing fevers. The miserable cottagers in Europe who live under the same roof, and in some instances in the same room with their cattle, are always healthy. In Philadelphia, fevers are less known in the neighbourhood of livery stables, than in any other part of the city. I could mention a family that has lived near thirty years near a livery stable in a sickly part of the city, that has never known a fever but from the measles or small-pox.

AN

I N Q U I R Y

INTO THE

CAUSES AND CURE

OF

S O R E L E G S.

I N Q U I R Y, &c.

HOWEVER trifling these complaints may appear, they compose a large class of the diseases of a numerous body of people. Hitherto the persons afflicted by them have been too generally abandoned to the care of empirics, either because the disease was considered as beneath the notice of physicians, or because they were unable to cure it. I would rather ascribe it to the latter, than to the former cause, for pride has no natural fellowship with the profession of medicine.

The difficulty of curing sore legs has been confessed by physicians in every country. As far as my observations have extended, I am disposed to ascribe this difficulty to the uniform and indiscriminate mode of treating them, occasioned by the want of a theory which shall explain their proximate cause. I shall attempt in a few pages to deliver one, which however imperfect, will, I hope, lay a foundation for more successful inquiries upon this subject hereafter.

I shall begin my observations upon this disorder, by delivering and supporting the following propositions.

I. SORE LEGS are induced by general debility, which, for the most part, is of the indirect kind. This I infer from the occupations and habits of the persons who are most subject to them. They are day-labourers, and sailors, who are in the habit of lifting great weights; also washer-women, and all other persons, who pass the greatest part of their time upon their feet. The blood-vessels and muscular fibres of the legs are thus overstretched, by which means either a rupture, or such a languid action in the vessels is induced, as that an accidental wound from any cause, even from the scratch of a pin, or the bite of a mosquito, will not easily heal. But labourers, sailors, and washer-women are not the only persons who are afflicted with sore legs. Hard drinkers of every rank and description are likewise subject to them. Where strong drink, labour, and standing long on the feet are united, they more certainly dispose to sore legs, than when they act separately. In China, where the labour which is performed by brutes in other countries, is performed by men, varices on the legs are very common among the labouring people. Perhaps, the reason why the debility induced in

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the legs produces varices instead of ulcers in these people, may be owing to their not adding the debilitating stimulus of strong drink to that of excessive labour.

It is not extraordinary that the indirect debility produced by intemperance in drinking ardent spirits, should appear first in the lower extremities. The indirect debility produced by intemperance in the use of wine, makes its first appearance in the form of gout, in the same part of the body. The gout, it is true, discovers itself most frequently in pain only, but there are cases in which it has terminated in ulcers, and even mortifications on the legs,

II. SORE LEGS are a disease of the whole system. This I infer,

1. From the causes which induce them, all of which act more or less upon every part of the body.
2. From their following or preceding diseases which obviously belong to the whole system. Fevers and dysenteries often terminate critically in this disorder; and the pulmonary consumption and apoplexy have often been preceded by the suppression of an habitual discharge from a sore leg.

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The two latter diseases have been ascribed to the translation of a morbific matter to the lungs or brain: But it is more rational to ascribe them to a previous debility in those organs, by which means their vessels were more easily excited into action and effusion by the stimulus of the plethora, induced upon the system in consequence of the confinement of the fluids formerly discharged from the leg in the form of pus. This plethora can do harm only where there is previous debility; for I maintain that the system (when the solids are exactly toned) will always relieve itself of a sudden preternatural accumulation of fluids by means of some natural emunctory. This has been often observed in the menorrhagia, which accompanies plentiful living in women, and in the copious discharges from the bowels and kidneys which follow a suppression of the perspiration.

3. I infer it, from their appearing almost universally in one disease, which is evidently a disease of the whole system, viz. the scurvy.

4. From their becoming in some cases the outlets of menstrual blood, which is discharged in consequence of a plethora which affects more or less every part of the female system.

5. I infer it from the *symptoms* of sore legs, which are in some cases febrile, and affect the pulse in every part of the body with preternatural frequency or force. These symptoms were witnessed, in an eminent degree, in two of the patients who furnished subjects for clinical remarks in the Pennsylvania hospital in the course of the last winter.

6. I infer that sore legs are a disease of the whole system, from the manner in which they are sometimes cured by nature and art. They often prove the outlets of many general diseases, and all the remedies which cure them, act more or less upon the whole system.

In all cases of sore legs there is a tonic and atonic state of the whole system. The same state of excessive or deficient action takes place in the parts which are affected by the sores. The remedies to cure them, therefore, should be *general* and *local*.

In cases where the arterial system is affected by too much tone, the general remedies should be,

I. BLOOD-LETTING. Of the efficacy of this remedy in disposing ulcers suddenly to heal, the two clinical patients beforementioned exhibited remarkable proofs last winter, in the presence of all the

the students of medicine in the university. The blood drawn was fizy in both cases. I have not the merit of having introduced this remedy into practice in the cure of ulcers. I learned it from Sir John Pringle. I have known it to be used with equal success in a sore breast, attended by pain and inflammation, after all the usual remedies for that disorder had been used to no purpose. I anticipate here a repetition of an objection to this remedy by persons who cannot, at first sight, reconcile excessive action in the arterial system with the debility which predisposes to it. I refer the reader for a defence of it, to what was said upon the subject of bleeding in the inflammatory species of consumption. It will only be necessary to add in this place, that indirect, like direct debility, when of short duration, never fails to produce such a degree of excitability, or vibratility (if I may be allowed to coin a word) in the blood-vessels, as to dispose them to be thrown into excessive action by the least increase in the force or number of the stimuli which act upon the human body.

II. GENTLE PURGES.

III. NITRE. From fifteen to twenty grains of this medicine should be given three times a-day.

IV. A

IV. A TEMPERATE DIET, and a total abstinence from fermented and distilled liquors.

V. COOL and PURE AIR.

The *local* remedies in this state of the system should be,

I. Cold water. Dr. Rigby has written largely in favour of this remedy when applied to local inflammations. From its good effects in allaying the inflammation which sometimes follows the puncture which is made in the arm in communicating the small-pox, and from the sudden relief it affords in the inflammatory species of the ophthalmia and in the piles, no one can doubt of its efficacy in sore legs, accompanied by inflammation in those vessels, which are the immediate seat of the disorder.

II. Soft poultices of bread and milk, or of bread moistened with lead water. Dr. Underwood's method of making a poultice of bread and milk should be preferred in this case. He directs us first to boil the milk, then to powder the bread, and throw it into the milk, and after they have been intimately mixed, by being well stirred and boiled together, they should be poured out and spread upon a rag, and a knife dipped in sweet oil or lard, should be run over them. The solidity and consistence

sistence of the poultice is hereby better preserved, than when the oil or lard is mixed with the bread and milk over the fire.

III. When the inflammation subsides, dry lint should be applied to the sore, and confined by means of a soft plaster of wax and sweet oil.

IV. Above all, rest, and an horizontal posture of the leg. Too much cannot be said in favour of this remedy in this species of sore legs. Nannoni, the famous Italian surgeon, sums up the cure of sore legs in three words, viz. “Tempo, riposo, “e pazienza;” that is, in time, rest, and patience. A friend of mine, who was cured by this surgeon of a sore leg, about thirty years ago, informed me, that he confined him to his bed during the greatest part of the time that he was under his care.

In sore legs, attended by too little general and local action, the following remedies are proper.

I. BARK. It should be used plentifully, but with a constant reference to the state of the system; for the changes in the weather, and other accidental circumstances often produce such changes in the system, as to render its disuse for a short time frequently necessary.

II. MERCURY. This remedy has been supposed to act by altering the fluids, or by discharging a morbid matter from them, in curing sore legs. But this is by no means the case. It appears to act as an universal stimulant ; and if it prove most useful when it excites a salivation, it is only because in this way it excites the most general action in the system.

III. MINERAL TONICS—such as the different preparations of iron, copper, and zinc.

IV. GENTLE EXERCISE. Rest, and a recumbent posture of the body, so proper in the tonic, are both hurtful in this species of sore legs. The efficacy of exercise, even of the active kind, in the cure of sore legs, accompanied by deficient action in the vessels, may easily be conceived from its good effects after gun-shot wounds which are mentioned by Dr. Jackson.* He tells us, that those British soldiers who had been wounded at the battle of Guilford, in North-Carolina, who were turned out of the military hospitals and followed the army, soonest recovered of their wounds. It was remarkable that if they delayed only a few days on the road, their wounds grew worse, or ceased to heal.

* *Medical Journal, 1790.*

In the use of the different species of exercise the same regard should be had to the state of the system which was recommended in a former disorder.

V. A nutritious and moderately stimulating diet, consisting of milk, saccharine vegetables, animal food, malt-liquors, and wine.

Wort has done great service in sore legs. The manner in which I have directed it to be prepared and taken it as follows——To three or four heaped table-spoonsful of the malt, finely powdered and sifted, add two table spoonsful of brown sugar, and three or four of Madeira, Sherry, or Lisbon wine, and a quart of boiling water. After they have stood a few hours, it may be drunken liberally by the patient, stirring it each time before he takes it, so that the whole substance of the malt may be conveyed into the stomach. A little lime-juice may be added, if the patient requires it, to make it more pleasant. The above quantity may be taken once, twice, or three times a day at the pleasure of the patient, or according to the indication of his disorder.

VI. OPIUM. This remedy is not only useful in easing the pain of a sore leg, but co-operates with other cordial medicines in invigorating the whole system.

The *local* applications should consist of such substances as are gently escarotic, and which excite an action in the torpid vessels of the affected part. Arsenic, precipitate, and blue vitriol, have all been employed with success for this purpose. Dr. Griffitts informed me, that he has frequently accomplished the same thing in the Dispensary by applications of tartar emetic. They should all be used, if necessary, in succession to each other; for there is often the same idiosyncrasy in a sore leg to certain topical applications, that there is in the stomach to certain aliments. After the use of these remedies, astringents and tonics should be applied, such as an infusion of Peruvian, or white-oak bark; the water in which the smiths extinguish their irons, lime-water, bread dipped in a weak solution of green vitriol (so much commended by Dr. Underwood) and compresses wetted with brandy, or ardent spirits of any kind.

Tight bandages are likewise highly proper here. The laced stocking has been much used. It is made of strong coarse linen. Dr. Underwood gives several good reasons for preferring a flannel roller to the linen stocking. It sets easier on the leg, and yields to the swelling of the muscles in walking.

In scorbutic sores on the legs, navy surgeons have spoken in high terms of an application of a mixture of lime-juice and molasses. Mr. Gillespie commends the use of lime or lemon-juice alone, and ascribes many cures to it in the British navy during the late war, after every common application had been used to no purpose.*

It is of the utmost consequence in the treatment of sore legs, to keep them clean, by frequent dressings and washings. The success of old women is often derived from their great attention to cleanliness, in the management of sore legs, than to any specifics they possess which are unknown to physicians.

When sore legs are kept from healing by affections of the bone, the treatment should be such as is recommended by practical writers on surgery.

I shall conclude this inquiry by four observations, which are naturally suggested by what has been delivered upon this disorder.

1. If it has been proved that sore legs are, in most cases, diseases of the whole system, is it not proper to inquire, whether many other diseases

* Medical Journal, Vol. VI.

supposed

supposed to be local are not in like manner diseases of the whole system? And if sore legs have been cured by general remedies, is it not proper to use them more frequently in other local diseases?— I am led to make this remark by having seen two instances of tumors, the one on the breast, and the other in the prostate gland, nearly cured by long journies.

2. If there be two states of action in the arteries in sore legs, it becomes us to inquire, whether the same opposite states of action do not take place in many diseases in which they are not suspected. I have before observed, that they occur in the scrofula. It would be easy to prove, that they exist in several other local diseases.

3. If the efficacy of the remedies for sore legs which have been mentioned, depends upon their being accommodated exactly to the state of the arterial system, and if this system be liable to frequent changes, does it not become us to be more attentive to the state of the pulse in this disorder than is commonly supposed to be necessary by physicians?—Indeed, if one of the principles I have aimed to establish in this and several of the foregoing essays be just, that is, that all prescriptions should be suited to the *state*, and not to the

name, of a disease, it follows that success in the practice of physic will depend chiefly upon the occasional change of the dose, or quality of a medicine with the changing state of the whole system.

4. It has been a misfortune in medicine, as well as in other sciences, for men to ascribe effects to one cause, which should be ascribed to many. Hence diseases have been attributed exclusively to morbid affections of the fluids by some, and of the muscles, and nerves by others. Unfortunately the morbid states of the arterial system, and the influence of those states upon the brain—the nerves—the muscles—the lymphatics—the glands—the viscera—the alimentary canal—and the skin, as well as the reciprocal influence of the morbid states of each of those parts of the body upon the arteries, and upon each other, have been too much neglected in most of our systems of physic. I consider the pathology of the arterial system as a mine. It was first discovered by Dr. Cullen. The man who attempts to explore it, will probably impoverish himself by his researches; but the men who come after him, will certainly obtain from it a treasure which cannot fail of adding greatly to the riches of medicine.

AN

A C C O U N T

OF THE

State of the Body and Mind

IN OLD AGE;

WITH

OBSERVATIONS ON ITS DISEASES,

And their Remedies.

A C C O U N T, &c.

MOST of the facts which I shall deliver upon this subject, are the result of observations made during the last five years, upon persons of both sexes, who had passed the 80th year of their lives. I intended to have given a detail of the names—manner of life—occupations—and other circumstances of each of them; but, upon a review of my notes, I found so great a sameness in the history of most of them, that I despaired, by detailing them, of answering the intention which I have purposed in the following essay. I shall, therefore, only deliver the facts and principles which are the result of the inquiries and observations I have made upon this subject.

I. I shall mention the circumstances which favour the attainment of longevity.

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II. I shall

II. I shall mention the phænomena of body and mind which attend it: and,

III. I shall enumerate its peculiar diseases, and the remedies which are most proper to remove, or moderate them.

I. The circumstances which favour longevity, are,

1. *Descent from long-lived Ancestors.* I have not found a single instance of a person, who has lived to be 80 years old, in whom this was not the case. In some instances I found the descent was only from one, but in general, it was from both parents. The knowledge of this fact may serve, not only to assist in calculating what are called the chances of lives, but it may be made useful to a physician. He may learn from it to cherish hopes of his patients in chronic, and in some acute diseases, in proportion to the capacity of life they have derived from their ancestors.*

but which are not mentioned in the text 2. *Tem-*

* Dr. Franklin, who died in his 84th year, was descended from long-lived parents. His father died at 89, and his mother at 87. His father had 17 children by two wives. The Doctor informed me that he once sat down as one of 11 adult sons and daughters at his father's table. In an excursion

2. *Temperance in Eating and Drinking.* To this remark I found several exceptions. I met with one man of 84 years of age, who had been intemperate in eating ; and four or five persons who had been intemperate in drinking ardent spirits. They had all been day-labourers, or had deferred drinking until they began to feel the languor of old age. I did not meet with a single person who had not, for the last forty or fifty years of their lives, used tea, coffee, and bread and butter twice a day as part of their diet. I am disposed to believe that those articles of diet do not materially affect the duration of human life, although they evidently impair the strength of the system. The duration of life does not appear to depend so much upon the strength of the body, or upon the quantity of its excitability, as upon an exact accommodation of stimuli to each of them. A watch spring will last as long as an anchor, provided the forces which are capable of destroying both, are always in an exact ratio to their strength. The use of tea and coffee in diet seems to be happily suited to the change which has taken place in the human body,

tion he once made to that part of England from whence his family migrated to America, he discovered in a grave-yard, the tomb-stones of several persons of his name, who had lived to be very old. These persons he supposed to have been his ancestors.

by

by sedentary occupations, by which means less nourishment and stimulus are required than formerly, to support animal life.

3. *The moderate exercise of the Understanding.* It has long been an established truth, that literary men (other circumstances being equal) are longer lived than other people. But it is not necessary that the understanding should be employed upon philosophical subjects to produce this influence upon human life. Business, politics, and religion, which are the objects of attention of men of all classes, impart a vigour to the understanding, which, by being conveyed to every part of the body, tends to produce health and long life.

4. *Equanimity of temper.* The violent and irregular action of the passions tends to wear away the springs of life.

Persons who live upon annuities in Europe have been observed to be longer lived, in equal circumstances, than other people. This is probably occasioned by their being exempted, by the certainty of their subsistence from those fears of want which so frequently distract the minds, and thereby weaken the bodies of old people. Life-rents have been supposed to have the same influence

ence in prolonging life. Perhaps the *desire of life*, in order to enjoy for as long a time as possible, that property which cannot be enjoyed a second time by a child or relation, may be another cause of the longevity of persons who live upon certain incomes. It is a fact, that the desire of life is a very powerful stimulus in prolonging it, especially when that desire is supported by hope. This is obvious to physicians every day. Despair of recovery is the beginning of death in all diseases.

But obvious and reasonable as the effects of equanimity of temper are upon human life, there are some exceptions in favour of passionate men and women having attained to a great age. The morbid stimulus of anger, in these cases, was probably obviated by less degrees, or less active exercises of the understanding, or by the defect or weakness of some of the other stimuli which keep up the motions of life.

5. *Matrimony.* In the course of my inquiries, I met with only one person beyond eighty years of age who had never been married.—I met with several women who had borne from ten to twenty children, and suckled them all. I met with one woman, a native of Herefordshire in England, who

who is now in the 100th year of her age, who bore a child at 60, menstruated till 80, and frequently suckled two of her children (though born in succession to each other) at the same time. She had passed the greatest part of her life over a washing-tub.

6. *Emigration.* I have observed many instances of Europeans who have arrived in America in the decline of life, who have acquired fresh vigour from the impression of our climate, and of new objects upon their bodies and minds ; and whose lives, in consequence thereof, appeared to have been prolonged for many years.

7. I have not found *Sedentary Employments* to prevent long life, where they are not accompanied by intemperance in eating or drinking. This observation is not confined to literary men, nor to women only, in whom longevity, without much exercise of body, has been frequently observed. I met with one instance of a weaver ; a second of a silver-smith ; and a third of a shoe-maker, among the number of old people, whose histories have suggested these observations.

8. I have not found that *acute*, nor that all *chronic* diseases shorten human life. Dr. Franklin had

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two successive vomicas in his lungs before he was 40 years old. I met with one man beyond 80, who had survived a most violent attack of the yellow fever; a second who had had several of his bones fractured by falls, and in frays; and many who had been frequently affected by intermittents. I met with one man of 86, who had all his life been subject to syncope; another who had for 50 years been occasionally affected by a cough; * and two instances of men who had been afflicted for forty years with obstinate head-achs. † I met with only one person beyond 80, who had ever been affected by a disorder in the *Stomach*; and in him, it arose from an occasional rupture. Mr. John Strange-ways Hutton, of this city, who died last year, in the 109th year of his age, informed me, that he had never puked in his life. This circumstance is the more remarkable, as he passed several years at sea when a young man. ‡ These facts may

serve

* This man's only remedy for his cough was the fine powder of dry Indian turnip and honey.

† Dr. Thiery says, That he did not find the itch, or slight degrees of the leprosy, to prevent longevity. *Observations de Physique, et de Medicine faites en differens lieux de L'Espagne.* Vol. II. p. 171.

‡ The venerable old man, whose history first suggested this remark, was born in New-York in the year 1684—
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serve to extend our ideas of the importance of a healthy state of the stomach in the animal economy ; and thereby to add to our knowledge in the prognosis of diseases, and in the chances of human life.

9. I have not found the *loss of teeth* to affect the duration of human life, so much as might be expected. Edward Drinker, who lived to be 103 years old, lost his teeth thirty years before he died from drawing the hot smoke of tobacco into his mouth through a short pipe.

His grandfather lived to be 101, but was unable to walk for thirty years before he died, from an excessive quantity of fat. His mother died at 91. His constant drinks were water, beer, and cyder. He had a fixed dislike to spirits of all kinds. His appetite was good, and he ate plentifully during the last years of his life. He seldom drank any thing between his meals. He was never intoxicated but twice in his life, and that was when a boy, and at sea, where he remembers perfectly well to have celebrated by a *feu de joye* the birth day of Queen Ann. He was formerly afflicted with the head-ach and giddiness, but never had a fever, except from the small-pox, in the course of his life. His pulse was slow, but regular. He had been twice married. By his first wife he had eight, and by his second seventeen children. One of them lived to be 83 years of age. He was about five feet nine inches in height, of a slender make, and carried an erect head to the last year of his life.

Dr.

Dr. Sayre, of New Jersey, to whom I am indebted for several very valuable histories of old persons, mentions one man aged 81, whose teeth began to decay at 16, and another of 90, who lost his teeth thirty years before he saw him. The gums, by becoming hard, perform, in part, the office of teeth. But may not the gastric juice of the stomach, like the tears and urine, become acrid by age, and thereby supply, by a more dissolving power, the defect of mastication from the loss of teeth? Analogies might easily be adduced from several operations of nature, which go forward in the animal economy, which render this supposition highly probable.

10. I have not observed *Baldness*, or *Grey Hairs*, occurring in early or middle life, to prevent old age. In one of the histories furnished me by Dr. Sayre, I find an account of a man of 81, whose hair began to assume a silver colour when he was only one-and-twenty years of age.

I shall conclude this head by the following remark :

Notwithstanding there appears in the human body a certain capacity of long life, which seems to dispose it to preserve its existence in every situation;

tion ; yet this capacity does not always protect it from premature destruction ; for among the old people whom I examined, I scarcely met with one who had not lost brothers or sisters, in early and middle life, and who were born under circumstances equally favourable to longevity with themselves.

II. I come now to mention some of the phenomena of the body and mind which occur in old age.

1. There is a great sensibility to *cold* in all old people. I met with an old woman of 84, who slept constantly under three blankets and a coverlet during the hottest summer months. The servant of prince de Beaufremont, who came from Mount Jura to Paris at the age of 121, to pay his respects to the first national assembly of France, shivered with cold in the middle of the dog days, when he was not near a good fire. The national assembly directed him to sit with his hat on, in order to defend his head from the cold.

2. Impressions made upon the *ears* of old people, excite sensation and reflection much quicker than when they are made upon their eyes. Mr. Hutton informed me, that he had frequently met his sons in the street without knowing them until

they had spoken to him. Dr. Franklin informed me that he recognized his friends, after a long absence from them, first by their voices. This fact does not contradict the common opinion, upon the subject of memory, for the recollection in these instances, is the effect of what is called reminiscence, which differs from memory in being excited only by the renewal of the impression which at first produced the idea which is revived.

2. The *appetite* for food is generally increased in old age. The famous Parr, who died at 152, ate heartily in the last week of his life. The kindness of nature, in providing this last portion of earthly enjoyments for old people, deserves to be noticed. It is remarkable, that they have, like children, a frequent recurrence of appetite, and sustain with great uneasiness the intervals of regular meals. The observation, therefore, made by Hippocrates, that middle-aged people are more affected by abstinence than those who are old, is not true. This might easily be proved by many appeals to the records of medicine; but old people differ from children, in preferring *solid* to liquid aliment. From inattention to this fact, Dr. Mead has done great mischief by advising old people, as their teeth decayed or perished, to lessen the quantity of their solid, and to increase the quantity of their

liquid food. This advice is contrary to nature and experience, and I have heard of two old persons who destroyed themselves by following it. The circulation of the blood is supported in old people chiefly by the stimulus of aliment. The action of liquids of all kinds upon the system is weak, and of short continuance, compared with the durable stimulus of solid food. There is a gradation in the action of this food upon the body. Animal matters are preferred to vegetable; the fat of meat, to the lean, and salted meat to fresh, by most old people. I have met with but few old people who retained an appetite for milk. It is remarkable, that a less quantity of *strong drink* produces intoxication in old people than in persons in the middle of life. This depends upon the recurrence of the same state of the system, with respect to excitability, which takes place in childhood. Many old people, from an ignorance of this fact, have made shipwreck of characters which have commanded respect in every previous stage of their lives. From the same recurrence of the excitability of childhood in their systems, they commonly drink their tea and coffee much weaker than in early or middle life.

3. The *pulse* is generally full, and frequently affected by pauses in its pulsations when felt in the wrists.

wrists of old people. A regular pulse in such persons indicates a disease, as it shews the system to be under the impression of a preternatural stimulus of some kind. This observation was suggested to me above twenty years ago by Morgagni, and I have often profited by it in attending old people. The pulse in such patients is an uncertain mark of the nature or degree of an acute disease. It seldom partakes of the quickness or convulsive action of the arterial system, which attends fever in young or middle-aged people. I once attended a man of 77 in a fever of the bilious kind, which confined him for eight days to his bed, in whom I could not perceive the least quickness or morbid action in his pulse until four-and-twenty hours before he died.

4. The marks of old age appear earlier, and are more numerous in persons who have combined with hard labour, a vegetable or scanty diet, than in persons who have lived under opposite circumstances. I think I have observed these marks of old age to occur sooner, and to be more numerous in the German, than in the English or Irish citizens of Pennsylvania. They are likewise more common among the inhabitants of country places, than of cities, and still more so among the Indians

of North America, than among the inhabitants of civilized countries.

5. Old men tread upon the *whole base* of their feet at once in *walking*. This is perhaps one reason why they wear out fewer shoes, under the same circumstances of constant use, than young people, who, by treading on the posterior, and rising on the anterior part of their feet, expose their shoes to more unequal pressure and friction. The advantage derived to old people from this mode of walking is very obvious. It lessens that disposition to totter, which is always connected with weakness:—hence we find the same mode of walking is adopted by habitual drunkards, and is sometimes from habit practised by them, when they are not under the influence of strong drink.

6. The *memory* is the first faculty of the mind which fails in the decline of life. While recent events pass through the mind without leaving an impression upon it, it is remarkable that the long forgotten events of childhood and youth are recalled and distinctly remembered.

I met with a singular instance of a German woman, who had learned to speak the language of our country

country after she was forty years of age, who had forgotten every word of it after she had passed her 80th year, but spoke the German language as fluently as ever she had done. The memory decays soonest in hard drinkers. I have observed some studious men to suffer a decay of their memories, but never of their understandings. Among these, was the late Anthony Benezet of this city. But even this infirmity did not abate the cheerfulness, or lessen the happiness of this pious philosopher, for he once told me, when I was a young man, that he had a consolation in the decay of his memory, which gave him a great advantage over me. " You can read a good book (said he) with pleasure but *once*, but when I read a good book, I so soon forget the contents of it, that I have the pleasure of reading it over and over ; and every time I read it, it is alike new and delightful to me." —The celebrated Dr. Swift was one of those few studious men, who have exhibited marks of a decay of understanding in old age ; but it is judiciously ascribed by Dr. Johnson to two causes which rescue books, and the exercise of the thinking powers, from having had any share in inducing that disease upon his mind. These causes were, a rash vow which he made when a young man, never to use spectacles, and a sordid seclusion of himself from company, by which means he was cut

off from the use of books, and the benefits of conversation, the absence of which left his mind without its usual stimulus—hence it collapsed into a state of fatuity. It is probably owing to the constant exercise of the understanding, that literary men possess that faculty of the mind in a vigorous state in extreme old age. The same cause accounts for old people preserving their intellects longer in cities, than in country places. They enjoy society upon such easy terms in the former situation, that their minds are kept more constantly in an excited state by the acquisition of new, or the renovation of old ideas, by means of conversation.

7. I did not meet with a single instance in which the moral or religious faculties were impaired in old people: I do not believe, that these faculties of the mind are preserved by any supernatural power, but wholly by the constant and increasing exercise of them in the evening of life. In the course of my inquiries, I heard of a man of 101 years of age, who declared that he had forgotten every thing he had ever known, except his GOD. I found the moral faculty, or a disposition to do kind offices, to be exquisitely sensible in several old people, in whom there was scarcely a trace left of memory or understanding.

8. Dream-

8. Dreaming is universal among old people. It appears to be brought on by their imperfect sleep, of which I shall say more hereafter.

9. I mentioned formerly the sign of a *second childhood* in the state of the appetite in old people. It appears further,—1. In the marks which slight contusions or impressions leave upon their skins. 2. In their being soon fatigued by walking or exercise, and in being as soon refreshed by rest. 3. In their disposition, like children, to detail immediately every thing they see and hear. And, 4. In their aptitude to shed tears; hence they are unable to tell a story that is in any degree distressing without weeping, Dr. Moore takes notice of this peculiarity in Voltaire, after he had passed his 80th year. He wept constantly at the recital of his own tragedies. This feature in old age did not escape Homer. Old Menelaus wept ten years after he returned from the destruction of Troy, when he spoke of the death of the heroes who perished before that city.

10. It would be sufficiently humbling to human nature, if our bodies exhibited in old age the marks only of a *second childhood*; but human weakness descends still lower. I met with an instance of a woman between 80 and 90, who exhibited the marks

of a *second infancy*, by such a total decay of her mental faculties as to lose all consciousness in discharging her alvine and urinary excretions. In this state of the body, a disposition to sleep, succeeds the wakefulness of the first stages of old age. Dr. Haller mentions an instance of a very old man who slept twenty, out of every twenty-four hours during the few last years of his life.

II. The disposition in the system to *renew* certain parts in extreme old age, has been mentioned by several authors. Many instances are to be met with in the records of medicine of the sight* and hearing

* There is a remarkable instance of the sight having been restored after it had been totally destroyed in an old man near Reading in Pennsylvania. My brother, Jacob Rush, furnished me with the following account of him in a letter from Reading, dated June 23, 1792.—

“ An old man of 84 years of age, of the name of Adam Riffle, near this town, gradually lost his sight in the 68th year of his age, and continued entirely blind for the space of twelve years. About four years ago his sight returned, without making use of any means for the purpose, and without any visible change in the appearance of the eyes, and he now sees as well as ever he did. I have seen the man, and have no doubt of the fact. He is at this time so hearty, as to be able to walk from his house to Reading, (about three miles) which he frequently does in order to attend church. I should observe,

hearing having been restored, and even of the teeth having been renewed in old people a few years before death. These phenomena have led me to suspect, that the antediluvian age was attained by the frequent renovation of different parts of the body, and that when they occur, they are an effort of the causes which support animal life, to produce antediluvian longevity, by acting upon the revived excitability of the system.

12. The *fear* of death appears to be much less in old age, than in early, or middle life. I met with many old people who spoke of their dissolution with composure, and with some who expressed earnest desires to lie down in the grave. This indifference to life, and desire for death (whether they arise from satiety in worldly pursuits and pleasures, or from a desire of being relieved from pain) appear to be a wise law in the animal economy, and worthy of being classed with those laws which accommodate the body and mind of man to all the natural evils, to which, in the common order of things, they are necessarily exposed.

observe, that during both the gradual loss, and recovery of his sight, he was no ways affected by sickness, but on the contrary enjoyed his usual health. I have this account from his daughter and son-in-law, who live within a few doors of me."

III. I shall

III. I come now briefly to enumerate the diseases of old age, and the remedies which are most proper to remove, or to mitigate them.

The diseases are chronic and acute. The CHRONIC are,

1. *Weakness of the knees and ankles*, a lessened ability to walk, and tremors in the head and limbs.

2. *Pains in the bones*, known among nosological writers by the name of rheumatalgia.

3. *Involuntary flow of tears*, and of mucus from the nose.

4. *Difficulty of breathing*, and a short cough, with copious expectoration. A weak, or hoarse voice generally attends this cough.

5. *Costiveness*.

6. An inability to retain the urine as long as in early or middle life. Few persons beyond 60 pass a whole night without being obliged to discharge their urine.* Perhaps the stimulus of this liquor in

* I met with an old man who informed me, that if from any accident he retained his urine after he felt an inclination to

in the bladder may be one cause of the universality of dreaming among old people. It is certainly a frequent cause of dreaming in persons in early and middle life ; this I infer, from its occurring chiefly in the morning when the bladder is most distended with urine. There is likewise an inability in old people to discharge their urine as quickly as in early life. I think I have observed this to be among the first symptoms of the declension of the strength of the body by age.

7th. *Wakefulness.* This is probably produced in part by the action of the urine upon the bladder ; but such is the excitability of the system in the first stages of old age, that there is no pain so light, no anxiety so trifling, and no sound so small, as not to produce wakefulness in old people. It is owing to their imperfect sleep, that they are sometimes as unconscious of the moment of their passing from a sleeping to a waking state, as young and middle aged people are of the moment in which they pass from the waking to a sleeping state. Hence we so often hear them complain of passing sleepless nights. This is no doubt frequently the case, but I am satisfied, from the result

to discharge it, he was affected by a numbness, accompanied by an uneasy sensation in the palms of his hands.

of an inquiry made upon this subject, that they often sleep without knowing it, and that their complaints in the morning, of the want of sleep, arise from ignorance, without the least intention to deceive.

8. *Giddiness.*

9. *Deafness.*

10. *Imperfect vision.*

The acute diseases most common among old people, are

1. *Inflammation of the eyes.*

2. The *pneumonia notba*, or bastard peripneumony.

3. *The colic.*

4. *Palsy and apoplexy.*

5. *The piles.*

6. *A difficulty in making water.*

7. *Quartan fever.*

All the diseases of old people, both chronic and acute, originate in predisposing debility. The remedies

remedies for the former, where a feeble morbid action takes place in the system, are stimulants. The first of these is,

I. **HEAT.** The ancient Romans prolonged life by retiring to Naples, as soon as they felt the infirmities of age coming upon them. The aged Portuguese imitate them, by approaching the mild sun of Brazil, in South America. But heat may be applied to the torpid bodies of old people artificially—1st. By means of the *warm bath*. Dr. Franklin owed much of the cheerfulness and general vigour of body and mind which characterized his old age, to his regular use of this remedy. It disposed him to sleep, and even produced a respite from the pain of the stone, with which he was afflicted during the last years of his life.

2. Heat may be applied to the bodies of old people by means of *stove rooms*. The late Dr. De-wit of Germantown, who lived to be near an 100 years of age, seldom breathed an air below 72° , after he became an old man. He lived constantly in a stove room.

3. *Warm clothing*, more especially warm bed-clothes, are proper to preserve or increase the heat

heat of old people. From the neglect of the latter, they are often found dead in their beds in the morning, after a cold night, in all cold countries. The late Dr. Chovet, of this city, who lived to be 85 slept in a baize night gown, under eight blankets, and a coverlet, in a stove room, many years before he died. The head should be defended in old people by means of woollen, or fur caps, in the night, and by wigs and hats during the day, in cold weather. These artificial coverings will be the more necessary, where the head has been deprived of its natural covering. Great pains should be taken likewise to keep the feet dry and warm, by means of thick shoes.* To these modes of ap-

* I met with one man above 80, who defended his feet from moisture by covering his shoes in wet weather with melted wax; and another who, for the same purpose, covered his shoes every morning with a mixture composed of the following ingredients melted together—Lintseed oil a pound, mutton suet eight ounces, bees-wax six ounces, and rosin four ounces. The mixture should be moderately warmed, and then applied not only to the upper leather, but to the soles of the shoes. This composition, the old gentleman informed me, was extracted from a book entitled “The complete Fisherman,” published in England in the reign of queen Elizabeth. He had used it for twenty years in cold and wet weather, with great benefit, and several of his friends who had tried it, spoke of its efficacy in keeping the feet dry, in high terms.

plying

plying and confining heat to the bodies of old people, a young bed-fellow has been added; but I conceive the three artificial modes which have been recommended, will be sufficient without the use of one, which cannot be successfully employed without a breach of delicacy or humanity.

II. To keep up the action of the system, *generous diet* and *drinks* should be given to old people. For a reason mentioned formerly, they should be indulged in eating between the ordinary meals of families. Wine should be given to them in moderation. It has been emphatically called the milk of old age.

III. YOUNG COMPANY should be preferred by old people to the company of persons of their own age. I think I have observed old people to enjoy better health and spirits, when they have passed the evening of their lives in the families of their children, where they have been surrounded by grand children, than when they lived by themselves. Even the solicitude they feel for the welfare of their descendants contributes to invigorate the circulation of the blood, and thereby to add fuel to the lamp of life.

IV. GENTLE EXERCISE. This is of great consequence in promoting the health of old people. It should be moderate, regular, and always in fair weather.

V. CLEANLINESS. This should by no means be neglected. The dress of old people should not only be clean, but more elegant than in youth or middle life. It serves to divert the eye of spectators from observing the decay and deformity of the body, to view and admire that which is always agreeable to it.

VI. To abate the pains of the chronic rheumatism, and the uneasiness of the old man's cough (as it is called); also to remove wakefulness, and to restrain during the night, a troublesome inclination to make water, OPIUM may be given with great advantage. Chardin informs us, that this medicine is frequently used in the eastern countries to abate the pains and weaknesses of old age, by those people who are debarred the use of wine by the religion of Mahomet.

I have nothing to say upon the acute diseases of old people, but what is to be found in most of our books of medicine, except to recommend

BLEEDING in those of them which are attended with plethora, and an inflammatory action in the pulse. The degrees of appetite which belong to old age, the quality of the food taken, and the sedentary life which is generally connected with it, all concur to produce that state of the system, which requires the above evacuation. I am sure that I have seen many of the chronic complaints of old people mitigated by it, and I have more than once seen it used with obvious advantage in their inflammatory diseases. These affections I have observed to be more fatal among old people than is generally supposed. An inflammation of the lungs, which terminated in an abscess, deprived the world of Dr. Franklin. Dr. Chovet died of an inflammation in his liver. The blood drawn from him a few days before his death was fizzy, and such was the heat of his body, produced by his fever, that he could not bear more covering, (notwithstanding his former habits of warm clothing) than a sheet in the month of January.

Death from old age is the effect of a gradual palsy. It shews itself first in the eyes and ears in the decay of sight and hearing—it appears next in the urinary bladder, in the limbs and trunk of the body, then in the sphincters of the bladder and

rectum, and finally in the nerves and brain, destroying in the last, the exercise of all the faculties of the mind.

Few persons appear to die of old age. Some one of the diseases which have been mentioned, generally cuts the last thread of life.

THE END.

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